

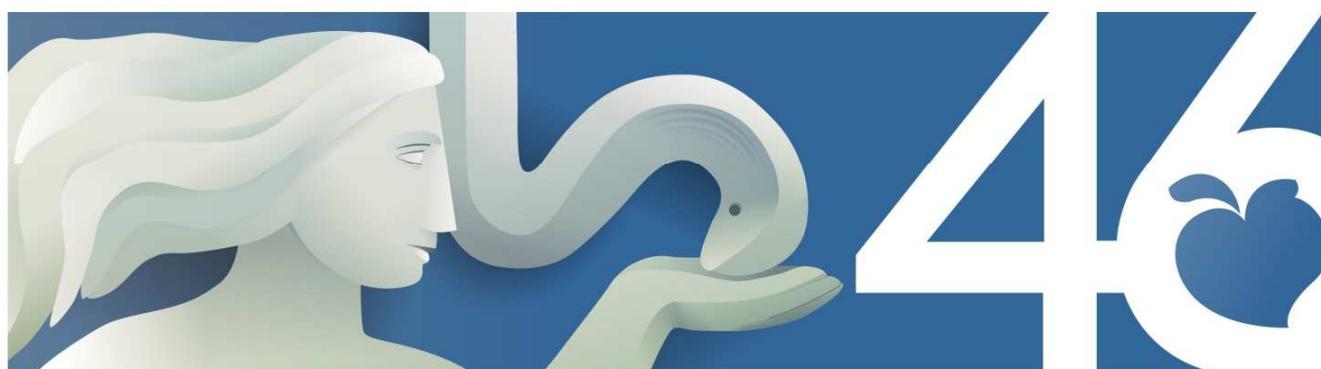


112 YEARS OF PASTEUR INSTITUTE NIŠ
112 GODINA PASTEROVOG ZAVODA U NIŠU

PUBLIC HEALTH INSTITUTE NIŠ
INSTITUT ZA JAVNO ZDRAVLJE NIŠ

UNIVERSITY OF NIŠ
FACULTY OF MEDICINE NIŠ
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MEDICINSKI FAKULTET U NIŠU

SERBIAN MEDICAL SOCIETY OF NIŠ
SRPSKO LEKARSKO DRUŠTVO
PODRUŽNICA NIŠ



46. DAYS OF PREVENTIVE MEDICINE 46. DANI PREVENTIVNE MEDICINE

INTERNATIONAL CONGRESS
MEĐUNARODNI KONGRES

BOOK OF ABSTRACTS
ZBORNİK REZIMEA

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Niš

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46. ДАНИ ПРЕВЕНТИВНЕ МЕДИЦИНЕ DAYS OF PREVENTIVE MEDICINE



PUBLIC HEALTH INSTITUTE NIŠ
ИНСТИТУТ ЗА ЈАВНО ЗДРАВЉЕ НИШ

UNIVERSITY OF NIŠ
FACULTY OF MEDICINE NIŠ
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МЕДИЦИНСКИ ФАКУЛТЕТ У НИШУ

SERBIAN MEDICAL SOCIETY OF NIŠ
СРПСКО ЛЕКАРСКО ДРУШТВО
ПОДРУЖНИЦА НИШ

MEĐUNARODNI KONGRES "46. DANI PREVENTIVNE MEDICINE" JE POD
POKROVITELJSTVOM MINISTARSTVA ZDRAVLJA I MINISTARSTVA
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PLENARNA PREDAVANJA PLENARY LECTURES

1. PREVENTIVNA MEDICINA U XXI VEKU 1. PREVENTIVE MEDICINE IN THE XXI CENTURI

Dušica Stojanović

Public Health Institute Niš

Faculty of Medicine, University of Niš

Major challenges are confronting modern medicine today. The curative medicine requirements for newer methods of therapy are increasing, and with them the cost of treatment and rehabilitation of patients also increases. In an era when we become aware that the health largely (and perhaps mostly) depends on the way of life and the environment, preventive medicine aims to point which prevention procedures would leading to disease decreasing.

With the development of knowledge about the causes of disease, the knowledge about the prevention of it same also developed. Thus, the detection of microorganisms led to the development of disinfection and sterilization, as well as to the development of vaccines. Opening of the Royal Military Pasteur Institute in Nis 1900th year had been crucial for the development of health care not only of the region but the entire country, and made a cornerstone of preventive medicine in Serbia. The opening of this institute came only 15 years after the opening of the Institute of its kind in Paris, 14 years after Moscow and 10 years after the New York, Chicago and Budapest. That placed Serbian in modern countries that are geared towards the development of health education and health care.

Since its establishment, Pasteur Institute has undergone several reorganizations, in order to modernize and adapt to the new demands of modern medicine. Since year 1926th, the Pasteur Institute became the first Hygienic Institute in Serbia, and since 1998th this institution was transformed into the Public Health Institute. In year 2006th it changed its name to the Public Health Institute of Nis. During all the years of work of the institution, the main goal was disease prevention and health promotion. In the promotion of health and the acquisition of new knowledge related to prevention since 1965th a significant role is given to the establishment of the scientific meeting titled "Days of preventive medicine." This international meeting, now traditional, enables experts in the field of preventive medicine to share their knowledge and experiences, as well as to acquire new knowledge and skills that will help them in future work.

There are many factors that may influence the occurrence of disease. In modern society man is the one who by their actions affect the environment and therefore the incidence of many diseases. Human activities lead to increasing pollution of the atmosphere, which changes its composition and weakens its protective role. Sudden and excessive increase in the concentration of gases involved in the greenhouse effect leads to an increase in temperature in the lower atmosphere and the Earth's surface, which has a significant impact on the climate and the environment. The impact of climate change on human health is ascending problem globally. According to experts, it is essential that health and environmental services co-operate in order to identify and monitor risk factors that may affect the emergence of new diseases in time. The potential consequences of climate change have a wide spectrum and can

affect the health of people and their way of life. The reactions of people to air pollution vary considerably. With some, only minor symptoms occur, while in a number of people they do not emerge. The temperature changes in healthy and chronic patients can lead to disorder of thermoregulation and dysfunction between heat production and its release from the body. A large number of diseases are associated with temperature changes. Symptoms range from physical and physiological distress, physiological changes, insecure and non-specific signs of mild or strong clinical manifestations of disease or death. As a consequences blood pressure increases, heart and blood vessels disease, respiratory diseases, infectious diseases, allergic diseases occur. A very important fact is that in a significant number of people symptoms disappear with air quality improvement. In addition to these effects on human health, global warming, which is a direct result of greenhouse gas emission increase, favors the occurrence of infectious diseases transmitted by vectors. Thus, we found more frequent occurrence of Shistosomiasis and malaria, which are positively correlated with global warming.

The risk of drastic climatic changes caused by more expressed greenhouse effect is too large to be able to ignore it, even though the health effects occur only sporadically in some areas, because any change in the environment affects the grounds on which the life on earth is based. It is believed that the temperature on Earth will increase by 1-4O C, which will lead to increased sea level, the tundra will disappear, the percentage of forest will reduce by 10%, deserts will continue to grow. Any change in temperature causes a large change in the surface of the planet, including wildlife, all of which are reflected in the health of people. To minimize the increase in the concentration of gases responsible for the greenhouse effect, it is necessary to reduce the emission of pollutants, constantly control of the concentration of pollutants in the air (continuous monitoring), as well as the adoption of applicable laws and educating people about the adverse effect of air pollution on health. It was noted that diseases related to global warming is much more common in developing countries and developed countries, more common among children and the elderly, so it is necessary focus forces to raise health consciousness in these groups.

On the other hand, modernization has brought changes in lifestyle that can adversely affect the health. This can best be seen in the more frequent occurrence of obesity. WHO data from 2008th related to obesity are alarming. Approximately 1.5 billion adults were overweight, of which 500 million were obese with BMI>30 kg/m². Number of obese children is also alarming - as many as 43 million children under 5 years old are obese.

Obesity is the result of imbalance between energy intake and overall energy consumption. Increased availability of food, especially foods rich in simple sugars and fats, as well as by more frequent meals "on the street" in the form of fast food consumption leads to increased energy intake. In contrast to the increase of energy intake, energy expenditure and energy requirements are reduced. This is contributed by more prevalent sedetarian way of life, not only in the adult population, but also among the children. What is really disturbing related to obesity are complications associated with it. Health consequences of obesity include metabolic - hormonal complications, diseases of organ systems, cancer, surgical and psychosocial complications. Obesity leads to a significant increase in morbidity and mortality with reduced quality of life and shortened life expectancy, while the social costs associated with obesity increase. The best way to solve the problem of obesity is prevention as an important aspect of public health and it should be implemented at all levels of health care.

Chronic non-communicable diseases (CND) are responsible for two-thirds (36 million) of deaths worldwide. Cardiovascular diseases, malignant neoplasms, chronic respiratory diseases and diabetes mellitus account for 80% of deaths by CND, and in the etiology they all have four leading risk factors: smoking, unhealthy diet, physical inactivity and hypertension. Socio

- economic factors, living conditions and lifestyles, rapid urbanization and population aging are the determinants of population health in general, and in the context of it CNB as well. Factors that precede the chronic non-communicable diseases and their epidemiological situation make vicious circle in relation to the socio - economic development of society and the ability of public health activities in this area.

Nosocomial infections, which have an important prevalence, incidence and mortality are programmatic and systematically monitored, studied and treated in the developed world during last twenty years. The World Health Organization approached them organizedly in year 2002nd by including a large number of countries in its programs. Serbia is also part of the program, but a better education in order to adequately monitor these programs is necessary. Modern curative and preventive medicine today are involved with serious consequences caused by hospital infections despite the use of modern diagnostic and therapeutic methods. In recent years, cost-benefit and other clinical surgical therapeutic interventions are threatened by detrimental actions of various microorganisms in the hospital environment conditions. Omnipresent resistance to antimicrobial drugs and limited therapeutic options lead to an unfavorable outcome against the opportunists who are the most common cause of infections in hospitalized and immune compromised patients. Therefore, nosocomial infections are an increasingly important health problem. The solution to this problem lies in prevention measures and requires a multidisciplinary approach.

Genus *Dirofilaria*, causes of zoonotic disease in nature are common parasites of different species around the world. It is a disease that occurs mainly in warmer climates, but has recently been found in moderate and colder geographic areas. Climate change have contributed to the more frequent occurrence of *Dirofilariasis* in dogs, usually caused by *Dirofilaria repens* which can cause infection in humans also. Human infections occur sporadically, but cases of superficial and visceral forms of human *dirofilariosis* have been described. In recent years, a systematic studies has shown the presence of *Dirofilaria* in dogs in Serbia. Modern methods for the detection of *dirofilariasis* in dogs enables the detection of disease and ability to provide timely and effective treatment, and prevention of zoonoses.

In the XXI century, preventive medicine is becoming increasingly inevitable. Maximum involvement of preventive medicine at all levels of health care leads to a significant improvement of health, reduction of morbidity, potential complications of chronic and infectious diseases, as well as life expectancy. Because the benefits that prevention offers are exceptionally large, the focus of medicine in this century should be on preventive medicine.

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2. ULOGA INSTITUTA ZA JAVNO ZDRAVLJE U SISTEMU ZDRAVSTVENE ZAŠTITE

2. THE ROLE OF PUBLIC HEALTH INSTITUTES IN THE HEALTH CARE SYSTEM

Prof. dr Zoran Milosević

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The World Health Organization (WHO) health defines health as "not merely the absence of disease, but psychological, physical and social well-being." Over the years, the WHO has developed a debated and revised definition (1984), which reads: "Health is the extent to which an individual or a group is capable of, on the one hand, realizing aspirations and satisfaction of needs, and on the other hand, changing or mastering the environment. Thus, health is a source of daily life, not just a case of life: it is a positive concept that emphasizes the social and personal resources (resources), as well as physical capabilities."

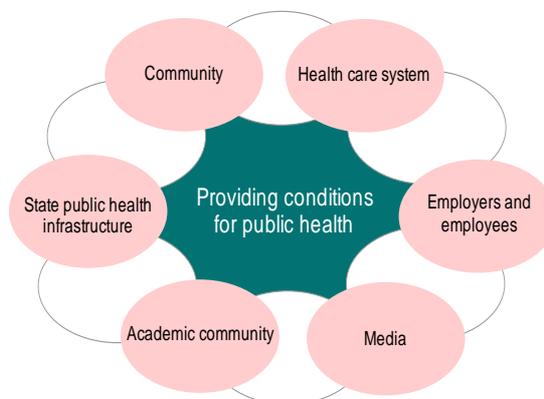
Public health – definition

The oldest definition was given by Professor Charles Edward Winslow, a professor at Yale University: "Public health is the science and art of preventing disease, prolonging life, promoting physical health and efficiency through organized community efforts for the protection of the environment, control of infection in the community, educating individuals on the principles of personal hygiene, the organization of health services for the early diagnosis and preventive treatment of disease and the development of social mechanisms to ensure that every individual in the community gets standard of living that will allow it to maintain health." The American glossary states that public health is "a science and practice of protecting and improving the health of the local community through preventive medicine, health education, disease control, sanitary supervision and monitoring of environmental hazards." According to the World Health Organization, public health can be defined as "the science and art of health promotion, prevention of disease and prolonging life through organized efforts of human community."

Law on Health Care of the Republic of Serbia from year 2005, defines public health in Article 119 as follows: "realizing public interest by creating conditions for the preservation of public health through organized comprehensive social activities aimed at preserving the physical and psychological health and environment, as well as the prevention of risk factors for disease and injuries, which is achieved by applying technology and health measures aimed at promoting health, preventing disease and improving the quality of life. "

Public health is primarily concerned with "the health risks and addressing infectious, toxic and traumatic causes of death," and now the new public health approach combines the traditional concept with social concept of health, especially pointing out the socio-economic determinants of health. New public health seeks to address the problems related to the fair use of health services, environmental protection, public health policy, association of health with social and economic development. The term "public health", also means achieving public interest by creating conditions for the preservation of public health through organized comprehensive social activities aimed at the preservation of physical and mental health,

environmental protection, and prevention of risk factors for disease and injury, which is achieved by applying health technologies and measures aimed at promoting health, preventing disease and improving quality of life.



Scheme no. 1: The public health system

Basic features of the new public health are:

- primary prevention as well as intervention strategies
- based on a number of disciplines
- based on the idea of social justice
- connection with government and public policy.

Health institutions of the Republic of Serbia

Health care service is comprised of health care facilities and private practices, health workers and associates who perform health activities at the primary, secondary and tertiary levels. Health institutions perform health practice, private practices perform specific health care services.

A health care institution can be established as:

- 1) health center;
- 2) pharmacy;
- 3) hospital (general and specific);
- 4) "zavod" institute;
- 5) "zavod" institute of public health;
- 6) clinic;
- 7) institute;
- 8) clinical and hospital center;
- 9) clinical center.

Health care institutions that are established using state-owned assets are established in accordance with the Network of health facilities plan, passed by the Government. Network

plan for the territory of an autonomous province, is determined by the proposal of the autonomous province.

Public health of Republic of Serbia – Institutes of Public Health

Leading role in the field of public health of the Republic of Serbia is held by "Zavod" institutes and Institutes of Public Health. They are organized at the national, district and city level. Their main task is to coordinate the overall area of public health and are directly involved in health promotion, disease prevention, improving physical and mental health, and life and work environment protection in cooperation with other relevant institutions and organizations outside the health sector and nongovernmental organizations.

Definition of "Zavod" institute of public health in Serbia is listed in section 121 of the Law on Health Care of the Republic of Serbia in 2005. and is as follows: "'Zavod" institute is a health institution conducting socio-medical, hygienic and ecological, epidemiological and microbiological health care." "Zavod" institute of public health conducts bacteriological, serological, virological, chemical and toxicological examinations and tests related to manufacturing and trade of food, water, air and items of general use, as well as in connection with the diagnosis of infectious and non-infectious diseases. "Zavod" institute of public health is coordinating, harmonizing and linking the work of professional health care institutions in the Network Plan for the territory for which it was established. "Zavod" institute of public health collaborates with other health care institutions in the territory for which it was established, as well as with local government authorities and other institutions and organizations relevant to the improvement of public health. "

Public Health Strategy of Serbia is the basis on which to build all of the plans and activities related to public health in our country. The objectives of this strategy rely on the document "Better Health for Everybody in the Third Millennium" and formulated functions of public health by the World Health Organization. Strategies are embedded in the Law on public health.

On the basis of these documents, it is possible to formulate the following basic activities of the "Zavod" institutes of public health of Serbia:

- monitors, evaluates and analyzes the health status of the population and reports to authorities and the public;
- monitors and studies the health problems and risks to human health;
- proposes elements of health policy, plans and programs of measures and activities designed for the preservation and improvement of public health;
- conducts information, education and training of the population to take care of their own health;
- evaluates the effectiveness, accessibility and quality of health care;
- plans to develop training of health workers and associates;
- encourages the development of an integrated health information system;
- performs applied research in the field of public health;
- cooperates and develops community partnerships to identify and solve health problems in the population;

Serbian public health is, in addition to "zavod" institutes and public health institutes, exercised within many other institutions. Some of them are directly involved in the health care system, and some indirectly contribute to the quality of public health.

Institutions that are part of the health system are:

- Ministry of Health
- Health centers
- Public health facilities
- Private health care facilities
- Professional bodies and commissions
- Medical and other chambers.

In addition to the above, a significant contribution is given by the institutions, such as:

- Local government
- Community and Inspection Services
- NGOs
- Mass-media
- Association of citizens/volunteers
- Religious organizations
- Preschool and school institutions
- Universities and colleges
- Schools of public health
- Reference institutions/offices
- Domestic and foreign agencies
- Cultural institutions.

Prospects and development of Institutes of Public Health

Institutes and "zavod" institutes of public health perform the leading, coordinating public health promotion role at the level of its areas of operation.

The perspective of public health of Serbia can be monitored through several important development directions:

1. development of the scope of activities of institutes and "zavod" institutes;
2. improvement of public health and living/working environment problem solving;
3. empowering the position and strengthening ties within the health care system;
4. strengthening cooperation with the local community;
5. development and training of personnel working in the field of public health;
6. strengthening links with national and international organizations and institutions in the field of research and other programs and projects;
7. retrieval and dissemination of funding sources for the activities of institutes and "zavod" institutes of public health.

Prospects for Development Institute and the Institute are defined by: Law on health care Law, which gives an important place and role of the institutes and "zavod" institutes of public health, and the vast experience and knowledge of employees in the health care institutions. Weaknesses such as the lack of appropriate strategic documents and regulations, the low level of awareness in the community and uncertain funding sources should be mentioned.

The overall objectives of institutes' and "zavod" institutes' development in the future period will be:

- Maintaining the upward trend of institutes' and "zavod" institutes' development;
- Providing conditions for sustainable financing;
- Improving the quality and efficiency of all activities in the field of public health;

- Development of health promotion, disease prevention and environmental protection, preservation and promotion of Serbian citizens' health, reduction of the incidence and prevalence of major diseases and conditions, and reducing risk factors.

Funding

Particular difficulty in the proper functioning of institutes and "zavod" institutes of public health is funding. Health institutions receive budget funds in the amount of salaries and material costs, and only institutes and "zavod" institutes of public health make the services (microbiological) and the duties and responsibilities (social medicine and epidemiology) contracts at the beginning of the year with the Republican Fund for Health Insurance. Starting next year, the funding of all health institutions in Serbia will be on the basis of services performed, and only the institutes and "zavod" institutes, since 2002, suffer the consequences of an incomplete and nonconforming financing system based on services, activities and tasks.

The second basis of financing comes from the projects conducted through the Ministry of Health, but these resources are also limited and insufficient to provide quality health care. Unfortunately, institutes and "zavod" institutes of public health are competent to deal with jobs on the market and to earn significant funds for their survival and functioning. In a number of these health institutions the assets from the market are already over 50% of the budget. One of the prospects in the financing of the institutes and "zavod" institutes could be moving the emphasis on increasing the participation of local governments in financing.

Conclusion

In today's modern world, when given the growing importance of preventive medicine and public health that combines traditional approach with the social concept of health, especially pointing out the socio-economic determinants of health, institutes and "zavod" institutes of public health as a major components of public health action, should have a greater role in the health care system of the Republic of Serbia.

We lack adequate strategic documents and legislation, and the change of the Food safety law has negatively affected the functions of the institutes and "zavod" institutes of public health. There is a low level of awareness in the community, lack of involvement of public health professionals in the community and funding sources are uncertain. All of the above represents aggravating circumstances for prosperity and development of the institutes and "zavod" institutes.

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**SESIJA HIGIJENA SA MEDICINSKOM EKOLOGIJOM
HYGIENE AND MEDICAL ECOLOGY SESSION****TEME: ŽIVOTNA SREDINA I ZDRAVLJE, ISHRANA I ZDRAVLJE****TOPICS: ENVIRONMENT AND HEALTH, NUTRITION AND HEALTH**

UVODNA PREDAVANJA:

INTRODUCTORY PRESENTATIONS:**1. EFFECT OF STRATEGIES TO REDUCE GREENHOUSE GAS EMISSIONS ON PUBLIC HEALTH**

Paul Wilkinson

London School of Hygiene & Tropical Medicine

The need to reduce greenhouse gas (GHG) emissions is not only a major challenge for society (St Louis and Hess 2008) but also one of the most important opportunities for addressing public health priorities. (Haines, McMichael et al. 2009)

This is not only because of the potential contribution of GHG reduction to mitigate climate change itself and hence the associated future adverse health impacts, but also because of more immediate, local ancillary impacts that may arise from the move towards a low carbon economy, which may reduce exposure to environmental pollutants (EEA 2006) (Markandya, Armstrong et al. 2009) and help promote healthy behaviours. Such healthy behaviours may arise, for example, from policies which help to promote active transport (walking and cycling) in place of reliance on motorized transport, (Woodcock, Edwards et al. 2009) or from the a shift in dietary patterns towards lower intake of meat and dairy produce, (Friel, Dangour et al. 2009) (Aston, Smith et al. 2012) perhaps with economic benefits as well (Lock, Smith et al. 2010).

The built environment presents particular opportunities for GHG reduction and improvement of public health. (UN HABITAT and International Urban Training Center 2012) The level of reduction required to meet needed GHG abatement targets – some 90% by mid-century in high income economies (IPCC Secretariat/World Meteorological Organization/United Nations Environment Programme 2007) – will need to be fully met in relation to dwelling related GHG emissions through improvements in energy efficiency and a switch towards lower carbon energy sources. Adaptations, both in terms of urban structure and building design, will also be needed to protect against climate change associated temperature, air pollution and flood risks.

The relationship between high outdoor temperature and mortality/morbidity has been well established in many settings, and there are concerns that urban environments may exacerbate health risks because of the urban heat island (UHI) effect – the phenomenon by which city centres experience higher ambient temperatures than surrounding non-urbanized areas. (Peng, Piao et al. 2012) In London, for example, calculations based on local epidemiological evidence suggest that around 50% of heat deaths may be attributed to the UHI. However,

although the UHI has an appreciable influence on temperatures, variations in indoor temperatures between the best and worst performing dwellings from an over-heating perspective are much larger than the UHI temperature increment.(Oikonomou, Davies et al. 2012) This suggests that policies to modify dwelling energy and thermal performance may have greater potential to ameliorate heat related risks than attempts to manipulate the UHI through large scale land-use interventions.

Modelling studies show that passive energy efficiency improvements appreciably improve (reduce) indoor temperatures during periods of hot weather for the vast majority of dwellings by helping to protect against heat transfer to the interior of the dwelling.(Mavrogianni, Wilkinson et al. 2012) However, in an appreciable minority, such changes may worsen over-heating potential and thus presumably also the associated risks to human health, although there is little direct epidemiological evidence to confirm this.

The epidemiological evidence is clearer for cold related risks, for which there is evidence not only that more energy efficient dwellings maintain higher indoor temperatures during periods of winter cold(Wilkinson, Landon et al. 2001), but also that fuel poverty – defined as the condition that applies when a household needs to spend more than 10% of its income on fuel to maintain adequate heating – is directly related to vulnerability to outdoor cold. Time series studies show a stronger relationship between a fall in outdoor temperature and an increase in mortality in areas where fuel poverty is high compared with areas where fuel poverty is comparatively low. This suggests that energy efficiency may have an appreciable effect on reducing the substantial burden of cold-related morbidity and mortality observed in many temperate climates.

However, dwelling energy efficiency is typically in part achieved not only by improving the thermal properties of the building fabric (better insulation) but also by control over ventilation. Ventilation changes have the potential for appreciable impact on health through changes to a number of pollutants in the indoor air. Reducing ventilation protects against the ingress of pollutants (especially particles) of outdoor origin, but acts to increase pollutants of indoor origin, including other particles, second hand tobacco smoke (in smoking households), radon, carbon monoxide and other combustion products, volatile organic compounds, and mould.(Wilkinson, Smith et al. 2009)

Thus, while reducing ventilation may protect against outdoor cold and particles, and usually heat, it may exacerbate exposures to a range of other pollutants of indoor origin. The net impact on health of energy efficiency interventions is thus a balance of positive and negative health effects that are influenced in differing degrees by changes to the building fabric, ventilation and energy source. Models of typical energy efficiency measures needed to meet 2030 abatement targets in the UK suggest that the overall balance is positive for health but with important negative impacts.

The potential for such negative impacts is illustrated by changes in indoor radon concentrations. Radon is a radioactive inert gas that enters dwellings from the rocks and soil on which the dwelling is built. Indoor levels are to large degree determined by local geology, and while not a substantial risk in all areas, it is still a major contributor to lung cancer burdens in most European and other countries.(Darby, Hill et al. 2005) Modelling studies for the UK suggest that increasing the air tightness of dwellings as prescribed under current building regulations will substantially increase mean and highest radon levels across the dwelling stock as a whole. This would substantially increase associated risks of lung cancer mortality and morbidity, which would appear after a time lag of ten to twenty years. In part those risks may be ameliorated by purpose provided ventilation. But there is a trade-off: if purpose-provided ventilation is increased fully to compensate health risk, the ventilation-

related energy savings are lost. In other words, ventilation energy efficiency is 'bought' only at the expense of health unless other remediation is imposed. There is also a prevention paradox. The majority of the additional burden of radon-related lung cancer occurs not in the few homes with the highest levels of radon above the UK action level of 200 Bq.m⁻³, but in the much larger number of dwellings with more moderate radon levels for which typical remediation measures may not be cost-effective.(Gray, Read et al. 2009)

The situation of adverse ventilation-related health impacts can, in theory, be avoided by use of mechanical ventilation with heat recovery (MVHR) systems which increase filtered air exchange while recovering heat from the outgoing air. Such systems can only be installed in dwellings with the greatest air tightness, and so far are not common in most countries. A concern with them is that improper installation, maintenance or operation may result in failure which may then be associated with large rises in indoor pollutants.

Despite these concerns the evidence is clear that most measures aimed at the reduction of greenhouse gas emissions have the potential for appreciable positive effects on health. This is certainly clear for transport policies which reduce local traffic-related emissions of air pollutants through fuel switching and reduction of traffic volumes, and especially where active travel is promoted with consequent increase in physical activity. It is clear also for electricity production based on renewable or nuclear technology in place of lignite, coal and oil: technologies which are low carbon are also generally good for health largely because of the reduction in ambient air pollution and occupational risks, as shown by evidence from the ExternE project.

Thus, in summary, GHG reduction strategies have potential for substantial short-term ancillary health impacts.(Haines, McMichael et al. 2009)Most such impacts are beneficial for health and add to the rationale for accelerating the transition to a low carbon economy.(Haines 2012)(Nilsson, Evengard et al. 2012)Home energy efficiency measures are an important element of any GHG reduction strategy, and carry potential for both positive and negative consequences for health, but if carefully designed and implemented, they could make an important contribution to the improvement of population health, especially if care is taken to protect against adverse consequences of reduced air exchange.

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2. NUTRITION IN THE ELDERLY – PROMOTING HEALTH AND PREVENTING DISEASE IN THE ELDERLY

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It is a well-known demographic fact that the population of the world is aging. Not only is the percentage of the population over the age of 65 growing rapidly due to the lengthening of life expectancy, but also there are more people living past the ages of 75 and 85 years⁽¹⁾. Morbidity continues to accompany the final years of life. In affluent societies, coronary heart disease, certain types of cancer, stroke, non-insulin dependent diabetes and atherosclerosis are among the leading causes of death and are associated with particular dietary habits. The old adage that 'one ounce of prevention is worth pounds of cure' is as true as ever. Food patterns associated with good health should reduce the occurrence and postponement of these chronic diseases. Appropriate health promotion strategies that encourage desirable food habits and other lifestyle factors such as physical activity, need to be implemented to maximize the quality of life for elderly populations, reduce the cost of health care and decrease the burden on health care professionals and families caring for older persons. "Quality of life" is a subjective concept. Socio-economic security (which affects food security), independence and self-esteem, are important elements in providing quality of life for aging individuals. Health professionals always emphasize the nutrient composition of food in formulating recommendations, but the social-psychological aspects of food such as the eating of traditional food, should not be overlooked. Clearly particular food habits are influenced by religious, cultural, social and emotional experiences⁽²⁾.

Nutrition plays a key role in keeping the human body functional. An inadequate supply of a given nutrient to cells and tissues leads to clinical symptoms of malnutrition. There is no universally accepted clinical definition of malnutrition. Malnutrition refers both to 'undernutrition' meaning inadequate intake (e.g., lack of adequate calories, protein and vitamins), as well as 'excessive intake of nutrients' (e.g., in obesity or conditions such as hypervitaminosis, or hypercholesterolemia. Malnutrition in the elderly is a multifactorial problem involving physical, physiological, psychosocial and economic factors. Malnutrition is associated with higher morbidity and mortality, as well as a poor quality of life⁽³⁾.

There is no consensus among different researches on the cut-off values of BMI for undernutrition. The accepted cut-off value for undernutrition by the "Nutrition Unit of the World Health Organization" is a value below a BMI of 18.5 kg/m²⁽⁴⁾. According to Beck and Oversen, the optimal range of BMI for elderly people is increasing from 20-25 kg/ m² to 23-29 kg/ m² suggesting new cut-off points for the elderly to be used in clinical practice⁽³⁾. Undernutrition in older persons is associated with the development of frailty, physical, cognitive, and affective decline in functional status (depression). Undernutrition has also been associated with the development of decubitus ulcers, altered immune function, hip fractures, and death. The loss of fat due to undernutrition leads to decreased protection of the hip bone at the point of impact and to decreased bone matrix which together with muscle strength and flexibility decline can lead to falls⁽⁵⁾. Poor nutritional status may lead to sarcopenia. Sarcopenia is a direct cause of age-associated loss of muscle mass and strength. Inadequate dietary protein intake may be an important sarcopenia cause⁽⁶⁾.

Obesity is a very common type of malnutrition among the elderly in developed countries. Obesity in the elderly is defined as BMI equal and over 30kg/m² while overweight is defined

as a BMI between 27-29.9 kg/m³. The risks of overweight and obesity in the elderly are still under debate. It is generally agreed that obesity is associated with a number of major diseases such as cardiovascular diseases, diabetes, cholelithiasis, respiratory impairment, gout, and osteoarthritis. In all these conditions, the treatment of obesity in itself can produce improvement in outcomes. However, moderate overweight among the elderly has been identified as a protective factor against hip fracture and in addition, overweight may be associated with lower mortality, implying that a limited increase in weight with old age is beneficial ⁽⁷⁾. *The Executive Committee on Nutrition Services for Medicare Beneficiaries* of the "Institute of Medicine" felt that one should refrain from making generalizations regarding weight reduction in the older population. Treatment for obesity or overweight must be individualized. When weight loss is recommended it is advisable to promote moderate and gradual weight loss with the help of a dietitian ⁽⁸⁾.

Russel et al's "Modified Food Pyramid for 70+ adults" ⁽⁹⁾ aim is to educate healthy active elderly people to optimize their nutrient intake patterns consistent with the changes in nutrient and energy needs of older individuals. The recommendations are: diversified intake of foods; diets high in grain products (preferably enriched or fortified whole-grains); vegetables (dark green, orange or yellow) and whole fruits; low fat dairy products and lean meats, fish and poultry; low to moderate use of sugar, salt and alcohol and physical activity in balance with energy intake. Inadequate hydration is a chronic problem for many seniors. Decreased thirst sensation is common with aging, and some medications affect the body's ability to regulate fluid balance. To combat this problem, the pyramid advises the elderly to drink at least 8 glasses of fluids a day. The nutrients, which are of particular concern and may require dietary supplements, are calcium and vitamin D for bone health, and vitamin B₁₂ for normal nerve function. For those elderly people who must not consume more than 1600 kcal daily, guidance is essential regarding the selection of foods that are high in nutrient density.

The role of public health information relating to dietary habits and increasing physical activity is very important. Dietary advice and dietary education can be given through brochures, radio and television, lectures, and cookery classes. The provision of food services within the community setting is recognized as critical to the independence of individuals. For example "Meals on Wheels" in the USA is a program in which prepared main meals are provided in the homes of elderly individuals including some suffering from dementia ⁽⁸⁾.

The prevalence of undernutrition is not so high in independently living elderly (5-8%), but in the case of elderly patients in nursing homes or in hospitals it reaches significant levels 60%. The purpose of nutritional screening (secondary prevention) is to identify individuals who are at risk of nutritional problems or have poor nutritional status. Screening is one of the first steps that can be taken to address nutrition-related problems, if necessary to be followed by a thorough nutritional assessment. Intervention can then take place where appropriate. The dietitian should take responsibility for conducting a full dietary assessment and intervention. Patients attending health clinics should be screened routinely (at least once a year for people over 75 years and more often for patients deemed to be at risk). In the community, members of the primary health care team must be provided with simple tools to accomplish this and trained in how to use them ⁽¹⁰⁾.

Numerous valid and reliable tools (questionnaires) to assess nutritional status have been developed for different purposes and for specific elderly populations. The ideal tool should be practical, cost-effective, and reasonably sensitive and specific. Screening tools, which are suitable for use in primary health in the community, are 'DETERMINE Your Nutritional Health Checklist' ⁽¹¹⁾ and the Mini-Nutritional assessment (MNA-SF) ⁽¹²⁾. The DETERMINE Checklist' consists of 10 yes/no questions incorporating the ten warning signs

of poor nutritional health. These questions cover (a) dietary assessment (b) general physical assessment (c). social assessment. A cumulative score of 6 or more points suggests a high risk of malnutrition. Once an elderly person has been found to be at nutritional risk he/she would be assessed further

The MNA-SF is specifically intended for the frail elderly, those individuals with some functional impairment such as mobility or cognitive disorders. The MNA has been validated and translated into several languages ⁽¹³⁾. The MNA-SF has 6 questions and can be administered in approximately 3 minutes. The maximum score is 14; 12 points or greater means there is no need for further assessment and 11 points or below requires further assessment.

In summary the following recommendations should be followed:

All older adults should be encouraged to increase their physical activity balance energy intake with energy expenditure, and increase the nutrient density of their diets ⁽²⁾.

Lunch clubs and day care centers for the elderly can provide nutritious meals with the advantage of social contact.

Supplementation: the Ministry of Health in Israel has nominated an expert, multidisciplinary committee on “vitamin and mineral supplementation for the elderly”. The committee, after examining the relevant literature and local recommendations, suggested a daily supplementation of a micronutrient preparation for institutionalized elderly. These recommendations are also applicable for the free-living elderly ⁽¹⁴⁾.

Nutrition services should be available in the primary health care system (in Israel the Kupot Holim). A registered dietitian or nutrition expert should be available to serve as a consultant to health professionals providing basic nutrition education and follow up, as well as to provide nutrition therapy when indicated. ⁽¹⁵⁾

Screening to determine nutritional status should be considered an important component of regular health examinations of older adults. It is important to have tools that health care workers can easily implement to screen for overall nutritional status ⁽¹⁵⁾.

For clinical and screening purposes, weight change and BMI are the most important anthropometric measures for both initial and follow-up assessments of nutritional status ⁽⁴⁾.

For persons older than 70 years who have remained overweight and do not have one or more chronic conditions, it may be sufficient for them to maintain their body weight ⁽⁷⁾.

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3. NUTRITION OF SCHOOL CHILDREN

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Abstract

Introduction: Health status of school children is the subject of many studies. There are many problems associated with the health of children, and a number of opportunities for research and adoption of certain measures which should help improve students' health and create conditions for their better life quality. One of the basic requirements for proper growth and development of children and the preservation and improvement of their health is a rational and balanced nutrition. Food is one of the most important factors contributing to the preservation and promotion of health, and prevention of various diseases. Proper nutrition is necessary to ensure proper growth and development of the child's body, as well as for its normal functioning.

Motivation and goal: The main goal of this study is to determine the nutrition of children (participation of certain foods in the nutrition, eating habits), and the influence of diet and nutrition on the quality of life of children aged 7 to 9 years in the Republic of Macedonia. The importance of this testing is providing measures for correcting diet and nutrition, as well as measures for improving the quality of life of schoolchildren.

Materials and Methods: The study included a total of 1020 students from the first and third grades (ages 7 to 9 years), from six urban and five rural Primary schools in the Republic of Macedonia. Among the research, surveys of students and their parents were conducted. We used a nutrition questionnaire (FFQ). Questionnaire contained questions related to the frequency of use of certain foods during the day (or week), nutritional habits, affinity for specific types of food, child hygiene habits (FRANCES E. THOMPSON, TIM BYEKS. Dietary Assessment Resource Manual. Nutr 1994; 124: 2245S-317S).

Results: Nutrition has a major impact on the proper growth of the child. We found that the majority of subjects use the school kitchen for food (662 or 65.4%), 26.8% of students carry food from home, and only 7.8% eats the snack. Of course, in addition to diet, a major impact on the nutritional status of children is a kind of food that children consume. Most of our tested students eat fried and baked food, 30.7% of them eat cooked food, and 13% dry food. Most average weight children eat cooked food (326 or 55.3%), while the smallest number of them consume dry food (80 or 13.6%). With students who are obese the situation is different. Most of them (52.5%) eat fried or grilled food, and only 12.1% cooked. There is a higher risk of obesity with children who eat more than two slices of bread a day (for a 22% increased risk), drink juice or sugary drinks instead of water (for 53% increased risk), eat snacks (for 50% increase risk), or candy (for 83% increased risk).

Conclusion: All kinds of food should be represented in the nutrition of children to ensure their good quality of life. Health of children and youth is the main indicator of the health status for the entire population. Therefore it should be kept and cherished.

Key words: nutrition, children, school, parents, food

Introduction

Health status of school children is the subject of many studies. There are many problems associated with the health of children, and a number of opportunities for research and adoption of certain measures which should help improve students' health and create conditions for their better life quality. Taking care of the health of children is a concern of the entire community. Many organizations in the world work on developing opportunities for disease prevention, and providing of appropriate care to ill children. When it comes to children health, it is inevitable to note that in order to improve the health it is essential to provide appropriate measures for the prevention of disease, timely and adequate medical care in case of illness, as well as general health promotion.

One of the basic requirements for proper growth and development of children and maintaining and improving their health is rational and balanced nutrition. Proper and adequate nutrition is necessary to ensure the good quality of life for children of school age. Food is one of the most important factors that contribute to the protection and improvement of health, and prevention of various diseases. Proper nutrition is necessary for ensuring the proper growth and development of the child's body, as well as for its normal functioning.

Proper nutrition includes not only fulfilling the energy needs of the organism in quantitative terms but also in terms of quality. Because of that, the food should have the appropriate biological value and be rich in nutrients, minerals and vitamins, which should provide adequate conditions for normal growth, development and function of the body.

Diet and nutritional status of children significantly affect their quality of life. Balanced and healthy nutrition, based on consuming a variety of foods that contain all the necessary nutrients, as well as the optimal daily intake of food, allows normal growth and development of children. With proper intake of nutrients, the body maintains vitality and activity, and provides energy and resistance to disease. Food for children must be balanced with physical needs and must contain a sufficient amount of calories, protein, carbohydrates, fats, vitamins and minerals.

Children should get proper eating habits, which should then be maintained. Parents have the greatest influence on the development of eating habits, but also the role of schools should not be ignored in shaping a child's personality and adopting habits for a healthy nutrition and proper behavior.

When it comes to proper nutrition of children of preschool and school age, information are insufficient, and condition in practice is even worse. The result is a growing number of children with compromised quality of life. Modern family, unfortunately, lives and eats fast. Overwork, lack of commitment and lack of knowing of the nutritious food biological values can lead to improper nutrition and endangering the children health. After returning from work, parents are tired and they are usually already on the way home "armed" with bags of fast food, and the kids in pre-school have already consumed similar meals. The most common excuse is: today we will eat this and tomorrow we will cook. And so from day to day, until you make an irreparable damage to the health of the entire family, and children are the most vulnerable in these cases, because they are in a period of growth and development.

Responsibility and duty of parents for children is to provide them a proper nutrition during childhood, thus providing a longer, happier and more beautiful life.

Motivation and goal

In the past period in the Republic of Macedonia several tests were made that are related to nutrition and nutritional status of school children, to their life style and the impact of risk factors to which children are exposed. These tests, however, are not enough, and they can't provide a good basis to adopt appropriate measures to correct the diet, and to maintain and improve health and quality of life for children. This fact opens the way for the implementation of several of these new tests and it was one of the main motivations for the implementation of this project.

This study aims to determine the nutrition of children (participation of certain foods in the diet, eating habits) and nutrition and nutritional status impact on quality of life of children between the ages of 7 to 9 years in the Republic of Macedonia. The importance of these tests is to provide a basis to suggest measures for correcting nutrition and nutritional status, as well as measures for improvement the quality of life of schoolchildren.

Materials and Methods

The study included a total of 1020 students from the first and third grades (ages 7 to 9 years), from six urban and five rural Primary schools in the Republic of Macedonia. Among the research, surveys of students and their parents were conducted. We used a nutrition questionnaire (FFQ). Questionnaire contains questions related to the frequency of use of certain food during the day (or week), nutritional habits, affinity for specific types of food, child hygiene habits (FRANCES E. THOMPSON, TIM BYEKS. Dietary Assessment Resource Manual. Nutr 1994; 124: 2245S-317S).

Results

Nutrition has a major impact on the proper growth of the child and prevention of obesity. Due to the fact that they are the students, it is understandable that some of the meals they need to consume are in school. Because of that, we were also interested in whether the subjects eat food in the school kitchen, whether they carry food from home or eat the kind of food we usually call crisps. We found that the majority of respondents (662 or 65.4%) eat in school kitchen, 26.8% of students carry food from home and only 7.8% eat snacks. It is a good nutrition, considering that the food you eat in school kitchen is tested and it is to a very little extent based on snacks.

On the other hand, in terms of nutritional status, we found that the best nutrition is when the children eat the food they bring from home. By univariate regression analysis, we have concluded that children who eat food which they carry from home are nearly 35% less likely to be obese than children who eat in the school kitchen. In contrast to them, children whose nutrition is based on the snacks are 35% more likely to be obese compared to the children who receive food in the school kitchen.

Of course, in addition to diet, a major impact on the nutritional status of children has a kind of food that children consume. Most of our respondents (56.2%) eat fried and grilled food, 30.7% eat boiled, and 13% dry food. Most children with average nutritional status (326 or 55.3%) eat cooked food, while the smallest number of them (80 or 13.6%) consumes dry food. With patients who are obese situation is different. Most of them (52.5%) eat fried or grilled food, and only 12.1% cooked.

Children who eat dry food have almost 70% more chances to become obese, compared to those children who eat fried or grilled food, and 47%, compared to children who eat cooked food.

Nowadays, obesity is a significant public health and social problem in the world. Food products that contribute to obesity include: ice cream, mayonnaise, potato chips, butter and margarine, cookies, cakes, chocolate, hot dogs, fried fish, fried chicken, bacon, sausage, sweet rolls. Consumption of high-calorie foods, combined with reduced physical activity contributes significantly to the increase of obesity with children.

Considering that, in the course of this research nutrition was our priority, one of the objectives was the analysis of the nutrition habits of the studied population. We retained with specific food items and how they affect nutritional status. We made an analysis in connection with the amount of intake of bread, meat, fish, eggs, fruits and vegetables, milk and milky products, sweets, snacks, as well as in connection with drinking.

In relation to the amount of bread consumed by the subjects during the day, most of them (46%) eat two pieces a day. 17.7% of respondents eat more than two slices of bread a day, 34.4 eat a slice a day, and only 2% do not eat bread. Children who eat bread are for over 14% at risk of being overweight, but it is of no significant difference in the statistical sense. Higher risk of obesity occurs with children who eat more than two slices of bread a day - by 22%.

Meat is an integral part of the diet. Survey results indicate that most of the respondents (499 or 49.3%) eat meat 2 to 3 times a week. An equal percentage of respondents (13.2%) eat meat once a week or every day, 19.2% of respondents eat meat 4-6 times a week, while only 5% of them do not eat meat.

Vegetables and fruits are an inevitable part of proper nutrition and increased consumption of these foods is constantly recommended. Intake of fruits and vegetables has a preventive effect when it comes to reducing obesity.

Our results show that the majority of respondents (663 or 62.6%) eat a salad every day. 22.2% of respondents consume salad two to three times a week, while 15.2% of them eat salad once a week. In relation to nutritional status, normal weight children in the majority of cases (66.9%) eat a salad every day.

Unlike normal weight children, overweight children eat this type of food every day in only 18.2%, while 63.6% of obese children eat a salad once a week.

In this case we easily come to the conclusion that eating salads has a protective effect when it comes to proper nutrition and the prevention of obesity. With univariate logistic regression, we have shown that, although not statistically significant, consuming of these foods acts as a protective factor.

Like vegetables, fruit also has a protective effect. The largest number of survey respondents (725 or 71.6%) consumed fruit every day. This applies to all groups formed on the basis of nutritional status, except that only in the group of obese children, there is a greater number of children (21.2%) who rarely, only once a week, eat fruit.

Daily consumption of fruits acts as a protective factor in the development of obesity and reduces the chance of its occurrence by 18%.

Considering the mentioned protective role played by fruits and vegetables, we should make an effort that these foods are underrepresented in the diet of children. Part of the habits regarding daily consumption of fruits and vegetables should be formed in the family circle. Children

who eat at home, with their families, eat more fruits and vegetables, drink less and take in less fat due to this type of diet. (143)

It is necessary to mention the so-called snacks as a risk factor for obesity. The number of respondents (23.6%) who rarely eat snacks is identical, or one to two, three to five times a week or more. However, analyzing only obese children, we come to the conclusion that most of the respondents (34.3%) eat snacks more than five times a week, and 31.3% of them three to five times a week.

Children who eat snacks are 50% more likely to be obese than children who do not. This confirms the fact that snacks act as a risk factor for obesity, especially when we take into account that children often eat snacks while watching TV or while playing games on the computer, and there are also already occurring additional risk factors for overweight.

Sweets are an inevitable part of children's diet. Overall, only 18.2% of respondents in our survey eat sweets more than five times a week. 29.3% of them rarely eat sweets, 22.8% of respondents eat them once or twice a week, and 29.7% eat them three to five times a week.

Conclusion

Generally, this research has demonstrated a significant impact of diet and nutritional status on the quality of life of examined population group of children. However, it was confirmed that many other factors (social, economic) in the family, school as well as in the wider environment can have a direct impact on the quality of life for this vulnerable population group.

It is necessary to take measures in order to improve the quality of life of school children in terms of establishing and maintaining healthy habits, particularly in regard to nutrition. We should work hard in order to reduce dietary risk factors, increase physical activity, and limit the time children spend watching television. In this respect the school is a very important channel for intervention because all the students (and their parents) are provided wider access to predicted measures.

For providing the good quality of life for children of school age there should be joint efforts of parents, teachers and society at large. Only in this way we can provide the growth of generations who will be physically and mentally healthy and who will be able to adequately deal with the challenges of future time.

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**USMENA PREDAVANJA
ORAL PRESENTATIONS****4. PROJEKAT DEZINFEKCIJA VODNIH OBJEKATA
4. DISINFECTION WATER OBJECTS**

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Drinking water from the municipal water supply is most controlled food because it is under continuous audit monitoring by authorized public health institutions. To avoid contamination of water, it is necessary estimate mandatory compliance the law-regulations prescribed norms and local government regulations (Department of Planning and Development and Construction Directorate) through certificates necessary for obtaining technical approval for internal water installation. One of the certificates proving the correctness of the new plumbing is evidence on safety of drinking water issued by an authorized public health institution, consisting of the certificate on the hiperdisinfection and water testing report.

The project was designed by the expert team of the Department of sanitary hygiene from 29.2.2012.g. and no time limit. It aims at comprehensiveness disinfecting water installations to ensure safety of tap water. Up to September 2012. the project included 36 objects with a total length of 11,608 m water distribution network.

Disinfection water objects is an integral part Water Safety Plans (WSPs) recommended from WHO.

Key words: disinfection, drinking water, water objects

5. JESTIVE VAKCINE

5. EDIBLE VACCINES

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International traffic and trade allow faster transmission of infectious diseases and the classical vaccines are not efficient enough to control them, especially when it comes to poor parts of the world. Modern science and genetic engineering have enabled the genetic modification of organisms (plants and animals) in order to create the “so-called” edible vaccines. The advantages of edible vaccines are: lower cost, easier transfer, easy storage, security, socio-cultural acceptability, etc. However, there is still controversy over whether these new vaccines could result in the emergence of the new type allergies, whether they’d be stable over time, how to choose the right plant for the vaccine, whether the insertion of new genes into the body could cause more harm than good, and many others. New research are being conducted around the world and will undoubtedly bring changes in modern medicine.

Key words: edible vaccines, infectious diseases, genetic engineering, genetic modification.

**POSTER PREZENTACIJA
POSTER PRESENTATION****6. C-REAKTIVNI PROTEIN KAO MARKER INFLAMACIJE, I
GOJAZNOST****6. C-REACTIVE PROTEIN AS A MARKER OF INFLAMMATION, AND
OBESITY**

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Obesity and related health disorders are a serious threat to current and future generations around the world. C-reactive protein, a very sensitive marker of inflammation that is positively associated with the occurrence of vascular events, is elevated in serum and in the obese population without comorbidity.

Methods: The survey was conducted in counsel for dietotherapy Institute of Hygiene, MMA in Belgrade. During the first examination the patients' anthropometric measuring calculated including body mass index (BMI). Indicators of inflammation markers C-reactive protein was determined at the Institute of Medical Biochemistry, Military Medical Academy. The subjects were examined from January to April 2012.

Results and discussion: The subjects were divided into three groups according to BMI (BMI of 25-29.9 kg/m² BMI of 30-34.9 kg/m² and BMI greater than 35 kg/m²). The result of the comparison of the BMI and the values of C-reactive protein in serum showed the following: Values of C-reactive protein were elevated in all three groups, where it was noted that they are the lowest in the group of patients with the lowest BMI, and they increase their value with increasing BMI. Analysis of the results of calorie-restrictive regime given, in order to achieve changes in anthropometric parameters and inflammation, will answer to whether and when it will come to normalization of these parameters. This will have repercussions regarding of reasonableness, necessity, and motivational acceptance of prescribed regime in dietotherapy.

Key words: C-reactive protein, obesity, women.

7. SPECIFIČNOSTI ISHRANE STUDENATA MEDICINSKOG FAKULTETA

7. SPECIFICITY OF THE NUTRITION MEDICAL STUDENTS

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Introduction: Specific features of student life (lack of time and awareness of the importance of diet regimens etc.) cause the adoption of different forms of behavior in terms of nutrition.

Objectives: To evaluate the association of basic characteristics of respondents with specific characteristics of their diet.

Methods: Through a cross-sectional study, from 12 to 16 December 2011 the research was carried out on a sample of medical students in Kosovska Mitrovica, which have voluntarily agreed to participate in the survey: As a research instrument was used questionnaire about behavior and health. A statistical analysis was performed by using Chi-square and Mc-Nemar test, with significance level of 0.05.

Results: Breakfast each day have 52.2% of respondents, 62.8% consumed meat products, at 18.2% respondents is represented black bread in the diet. Sweets consumed daily 60.5% of respondents, while 45.9% ad salt in food. 52.0% respondents consumed fruit and vegetables their 60.7%. In the selection of food on health considering 64.5% of respondents. In the diet of men more often was represented the meat, while vegetables and sweets in women. Regularly have breakfast and eat brown bread and fruit students studying in their own city, a meat and vegetables consumed more students in dormitories. About their health when choosing food more often think successful students and those with diagnosed disease.

Conclusion: The analysis of the specific nutrition of students shows that there are significant differences in diet in respondents with different characteristics.

Key words: students, nutrition, specific.

8. ODREĐIVANJE SADRŽAJA VITAMINA C U VOĆNIM SOKOVIMA NA TRŽIŠTU SRBIJE

8. DETERMINATION OF VITAMIN C IN JUICES PRESENT IN SERBIAN MARKET

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Introduction: Vitamin C is hydro soluble vitamin that can't be synthesized in the human body. It shows antioxidant effect, is a cofactor of many enzymes, reduces risk for developing chronic diseases. The content of vitamin C in juices depends on type and maturity of fruit, climatic conditions and exposure to sunlight, production methods and product packaging. There are several methods for determination of vitamin C. HPLC is method of choice because of its simplicity, selectivity and speed.

The aim: Objective of this research was to determine the content of vitamin C in soft drinks in the Serbian market.

Material and Methods: Quantification of ascorbic acid was performed on Agilent 1200 HPLC apparatus (Agilent Technologies, Palo Alto, CA, USA) with photodiode, automatic sampler and computer. Mobile phases were 40 mM phosphate buffer pH 2.5 and methanol.

Results: After the peak areas of samples have been measured and standard curve formed ($R^2 = 0.9999$), concentration of vitamin C in juices was determined. The most abundant in vitamin C content was 100% orange juice (46.29 mg/100 ml), while in pineapple and strawberry juice was below limit of detection.

Conclusion: There is wide range of fruit juices and nectars in our market. Numerous studies on vitamin content in juices provide good foundation for the most appropriate choice of drinks.

Key words: vitamin C, fruit juices, fruit nectars

Acknowledgement: This work was supported by the Ministry of Education and Science of the Republic of Serbia, grants No III 046013, Projects No. 175092 and 31060

9. SADRŽAJ NITRATA I NITRITA U VOĆU I POVRĆU U NIŠU (SRBIJA)

9. NITRATE AND NITRITE CONCENTRATION IN FRUITS AND VEGETABLES IN NIS (SERBIA)

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Public Health Institute Nis

Fruits and vegetables may contain variable amounts of nitrate and nitrite, depending on the fertilizer application, light intensity, daytime temperature and soil characteristics. The purpose of this paper is to determine the content of nitrate and nitrite concentration in fruits and vegetables in Nis (Serbia).

The laboratory of the Public Health Institute Nis, in the period from June 2011- June 2012, using spectrophotometry method (ISO 6635 – 1984 (E)), determined the content of nitrate and nitrite in 30 samples of fruits and vegetables from domestic production (spinach, cabbage, zucchini, tomato, potato and apple).

The nitrate contents were the highest in cabbage (range: 69-532mg/kg; average:305.4 mg/kg), lettuce (375mg/kg) and spinach (336mg/kg), and they were moderately high in potato (range: 44-235 mg/kg; average:135.3 mg/kg) and zucchini (214mg/kg). Low nitrate content were found in apple (range: <1-21 mg/kg) and tomato (range: <1-11 mg/kg). Low nitrite contents (below 1mg/ kg) were found in all analyzed samples of fruits and vegetables.

Maximum permitted levels (MPL) of nitrates in European Union are defined only for spinach and lettuce (Commission Regulation EC 2002). In Serbia the new Draft of the Regulations from 2011 stipulates maximum allowed concentrations also only in lettuce and spinach depending of time of maturity during calendar years, but not contents in cabbage when is contents of nitrite is also high.

Further national monitoring of nitrate in fruits and vegetables is needed. Considering the toxicity of nitrates and the possibility of their transformation to nitrite and carcinogenic N-nitrosoamines, these results may be useful for estimation of daily intake in population in Serbia.

Key words: nitrate, nitrite, fruits, vegetables

10. ZNAČAJ I ZASTUPLJENOST MAGNEZIJUMA U ISHRANI PREDŠKOLSKE DECE

10. DISTRIBUTION OF MAGNESIUM IN NUTRITION OF PRESCHOOL CHILDREN

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Introduction: Magnesium is one of the most abundant elements in the tissues. It is part of chlorophyll, but magnesium ions also play an essential role in the maintenance of osmotic pressure in the blood and other tissues and in forwarding impulses in the nervous system. In addition to calcium and phosphorus, it is essential for skeletal development because it facilitates the incorporation of calcium into bone.

Aim: The aim was to investigate the presence of calcium and phosphorus in the diet of preschool children in a children's nursery institution "Pčelica" in Niš in the period of 2001-2010. year.

Material and Methods: The study of nutrition in preschool children's institution "Pčelica" in Niš, was performed based on the survey list of warehouses. Food composition tables were used for the analysis of the magnesium content in food (Jokic N, 1999). The results are interpreted compared to the Regulation on the social norms of nutrition of children in children institutions (Official journal of the Republic of Serbia, no. 50/94).

Results: The results show that the presence of magnesium is decreased ($\bar{x}=126,99 \pm 13,44\text{mg}$) compared to the norms prescribed, which are 150mg per day for children aged 1-3 years and 200 mg per day for children ages 4-7 years. Reduced magnesium levels in the diet can lead to a variety of disorders: fatigue, anorexia, muscle cramps, irregular heartbeat and other disorders

Conclusion: In the diet of preschool children in the institution "Pčelica" in Niš, magnesium is not present in sufficient concentrations, and it is necessary to adjust menus in order to increase intake of food with high magnesium content.

Key words: magnesium, nutrition, preschool children

Acknowledgement: This work was supported by the Ministry of Education and Science of the Republic of Serbia, Projects No. 175092 and 31060

11. STANJE ISHRANJENOSTI DECE UZRASTA 14 GODINA U TOPLIČKOM OKRUGU

11. NUTRITIONAL STATUS OF CHILDREN AGED 14 YEARS IN TOPLICA DISTRICT

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The increase in childhood obesity and overweight has reached epidemic levels in developed and developing countries, and is accompanied by significant comorbidities and health problems. Anthropometric assessment still takes on great importance in the nutritional diagnosis of children due to its ease of application, objectivity of measurements, and the fact that it is possible to compare results against a reference standard.

The aim of this study was to determine the anthropometric and nutritional status among children in Toplica district. The cross sectional study encompassed 453 children (224 boys and 229 girls) aged 14 years and it was conducted between 2003-2004. The body mass index (BMI) were calculated using the anthropometric measurements (body heights and body weights) measured by trained physicians or nurses.

Low height for age (<5th percentile) was observed in 6,30% of boys, and in 6,11% of girls, compared with 4,80-5,36% of tall children (height for age, >95th percentile). Overweight (BMI, 85th to 95th percentile) was observed in 9,38% of boys, and in 9,61% of girls, compared with 5,24-5,80% of obese children (BMI, >95th percentile). On the basis of standard deviation (SD) score, the prevalence of the overall overweight (SD score, 2 to 3 for BMI) among the examined children was 4,4% in boys and 2,6% in girls. The prevalence of the SD score >3 for BMI was 2,2% in boys and 2,6% in girls.

Children should be considered the priority population for intervention strategies. Effective prevention will require efforts to understand and identify the critical shifts in dietary intake, physical activity, or both that contribute to becoming overweight and having associated complications.

Key words: nutritional status, children

12. NUTRITIVNE NAVIKE I STIL ŽIVOTA ADOLESCENATA U NIŠU 12. NUTRITIONAL HABITS AND LIFESTYLE OF ADOLESCENTS IN NIŠ

Biljana Marković, V.Petrovski

Dom zdravlja Niš.

Introduction: Adolescence is a period of a most intense growth and development and turbulent physical, emotional and social changes. Eating habits and lifestyle are created in that period which is why adolescents are ideal targets for education.

The aim of paper: Assess the attitudes and habits of adolescents related to healthy eating and physical activity.

Material and methods: The survey was conducted in may 2012. in 28 primary and 18 secondary schools. 3470 adolescents age 14 to 17 years participated in the survey.

Results: About 20% of adolescents from Niš skip their meals, 46% of them have a snack during the day, and 47% of them eat late at night. Only 3% answered they don't eat fast food, 48% eats it 3 times a week and 40% 5 to 10 times a week. 32% of them regularly consume juices, sodas 38%, energy drinks 8%, and only 26% drinks milk on a regular basis. Most commonly found food in adolescents nutrition are bread and bagels(up to 72%), followed by fruits(37%) and vegetables(26%), and chips and salty snacks(20%).

Only about 5% have fish in their diet. Approximately 12% use some kind of a slimming preparation. Regular physical activity have 61% of adolescents.

Conclusion: Adolescents in Niš don't have regular meals during the day and eat late at night. They consume food rich in saturated fat and concentrated carbohydrates of high caloric value and poor in vitamins, minerals and proteins. They also spend a large part of the day in sedentary activities.

Key words: survey, adolescents, nutrition, physical activity.

13. UTICAJ ISHRANE NA LIPIDEMIJU I GLIKEMIJU KOD STARIH
SLABO POKRETNIH OSOBA
**13. IMPACT OF NUTRITION AT LIPIDEMIA AND GLYCEMIA AT
ELDERLY PEOPLE WITH PARTIAL MOBILITY IMPAIRMENT**

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It is well known that the adequate nutrition can impact on the most chronic disease and disability at elderly people. Reduction of activity and the basic metabolism at elderly relate to decreasing nutrition needs and changing nutrition habits.

The goal of this research was to establish the impact of nutrition at lipidemia and glycemia at elderly people with partial mobility impairment.

The data obtained were processed using the methods of descriptive and analytic statistics (student's t-test, χ^2 test and the univariate and multivariate logistic regression analysis). The 249 patients have been interviewed (169 female and 80 male), average 80.93 ± 6.63 and had their lipidemia (HOL, TGL) et glikemia (GLU) values measured in home conditions.

Among 71.5% respondents GLU was greater than 6 mmol/L —whereas the lipids were much better regulated – 25.3% of respondents had $\text{TGL} > 2 \text{ mmol/L}$, and only 5.6% had $\text{HOL} > 6 \text{ mmol/L}$. In average a respondents had 3 meals per day without consideration of values GLU, HOL et TGL. The nutrition consisted of bread, pastry, milk and dairy products, where also established that there was no significant difference in nutrition between those who had increased values of lipids and glucose in blood and those with normal values.

Values of GLU, HOL et TGL did not in correlation with habits in nutrition at respondents possibly because of small and rare meals. increased glucose values were the most frequent patients and further preventive check ups, medication and education of this vulnerable group should go in that direction.

Key words: glycemia , lipidemia , nutrition

14. KONTROLA RADIJACIONO –HIGIJENSKE ISPRAVNOSTI KAFE U SRBIJI TOKOM 2011-2012 GODINE

14. CONTROL OF RADIATION-HYGIENIC COFFEE IN SERBIA DURING THE YEAR 2011-2012

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Introduction: Radionuclide content in coffee is determined by the type of coffee, geographic origin, soil composition, climate, depth of roots. Coffee grown at higher altitudes and windy areas will have higher levels of radioactivity. Radioactive contamination occurred during the period of blossoming plants will provide higher levels of contamination of grain. Most of the radionuclides are retained in the membranes of the coffee beans.

Objective and methods: Monitoring of radionuclides in 46 samples of roasted coffee, instant coffee, green coffee and coffee substitutes, which were collected randomly during 2011-2012. year. The samples were from different manufacturers, all properly packed, marked and with valid exposition date. Gamma spectrometry analysis was performed with 34% HP Ge detector

Results and discussion: The table shows the results of specific activities of ¹³⁷Cs and ⁴⁰K in 46 samples of ¹³⁷Cs ⁴⁰K

Samples	¹³⁷ Cs	⁴⁰ K		
		min	mean	max
Roasted coffee	<1,45	290±30	570±60	680±70
Instant Coffee	<0,78	180±20	610±60	710±70
Green Coffee	<1,12	210±20	530±50	620±60
Coffee substitutes	<1,97	220±20	690±65	820±80

In analyzed samples of coffee artificial radionuclides ¹³⁷Cs were not observed, while the natural radionuclide ⁴⁰K was present in all samples, the values that are common for this type of samples. All samples satisfied legal criteria for radiological safety.

Key words: coffee, radionuclides, radioactivity.

Acknowledgement: This work was supported by the Ministry of Education and Science of Republic of Serbia (Project III 43 009).

15. ALIMENTARNE EPIDEMIJE POVEZANE SA UPOTREBOM MLEKA I
PROIZVODA OD MLEKA U AP VOJVODINI
U PERIODU OD 1981-2010. GODINE
**15. FOODBORNE OUTBREAKS CAUSED BY MILK AND DAIRY
IN AP VOJVODINA IN THE PERIOD FROM 1981-2010**

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Safe practice of pasteurization and sterilization of milk and dairy products is effective in reducing the incidence of food-borne outbreaks caused by raw milk and raw dairy products. However, outbreaks associated with their use are still occurring. Lately, raw milk advocates and movement that fights for the right of sale and consumption of raw dairy products in the world is growing promoting different health benefits of raw milk consumption. On the other hand, health authorities are unequivocal for heat treatment of milk. On the free market in AP Vojvodina there are still traditional raw dairy products ("cottage" cheese and raw cream).

In the period from 1981-2010, in Vojvodina region, out of 179 reported foodborne outbreaks connected with milk or dairy product consumption. In 126 (70.39%) outbreaks with a total of 2276 cases and one death bacteriological investigation confirmed that the incriminated food products were from this food group. In 48 (26.82%) outbreaks, bacteriological analysis showed that food other than dairy led to the outbreak. In 5 (2.79%) outbreaks more, bacteriological analysis did not confirmed any incriminated food. In some outbreaks, there was not enough food for microbiological analysis. According to available data, the analysed outbreaks frequently were associated with consumption of raw milk and dairy products.

Consumption of unpasteurized milk and cheese poses a public health risk. International and national regulations ensure safety and suitability of milk and dairy products for direct human consumption by obliging food business operators on highest level of hygiene and restricting placement of raw milk and raw milk products on the market.

Key words: Raw Milk, Pasteurization, Dairy, Food Safety, Food-borne Outbreaks, Risk Assessment

16. PRISUSTVO *ENTEROBACTERIACEAE* U TERMIČKI OBRAĐENOJ HRANI

16. THE PRESENCE OF *ENTEROBACTERIACEAE* IN THERMALLY PROCESSED FOODS

Zoran Bogojević, A.Svetozarević-Nikolić, Lj. Krivokapić, N. Stanković

Public Health Institute Niš

Enterobacteriaceae stand for a group of bacteria that are found in the intestinal tract of humans and animals, as well as in soil, fruit, vegetables and the outside environment. This group of microorganisms includes both pathogenic and non-pathogenic bacteria. In ready-to-eat foods that have been thermally processed, the presence of *Enterobacteriaceae* represents an indicator of post-processing contamination of foods or their inadequate cooking. The aim of this paper is the assessment of the hygienic accuracy of thermally processed foods that are consumed in restaurants. During a one-year period (from June 2011 to August 2012), 258 samples of ready-to-eat foods from the restaurants from the territory of Niš were examined for the presence of *Enterobacteriaceae* in the Laboratory for Sanitary Microbiology of The Public Health Institute in Niš. The analyses were carried out with the application of the ISO 21528-2 method, and in accordance with the suggested criteria prescribed in "The Guide for the Application of Microbiological Criteria for Foods". The presence of *Enterobacteriaceae* was determined in 9 out of 258 examined samples, which makes 3.5%. In 4 positive samples, *Enterobacteriaceae* were found within allowed limits, so only 5 samples (1.9%) contained prohibited number of these microorganisms and did not meet the prescribed criteria. Based on the obtained data, the hygienic accuracy of ready-to-eat foods in the restaurants from the territory of Niš is satisfactory, which is probably a consequence of introducing and implementing the HACCP system in the objects for preparing foods for people.

Key words: *Enterobacteriaceae*, foods.

17. PRILOG VALIDACIJI KVALITATIVNIH HEMIJSKIH METODA

17. CONTRIBUTION TO VALIDATION OF QUALITATIVE METHODS

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Public Health Institute Nis

During the preparation and storage of food products, the spontaneous oxidation of lipids is the main reaction responsible for the deterioration of the organoleptic and the nutritional qualities. By Kreiss reaction we identify aldehydes in lipids, resulted in advanced stages of fat oxidation. Epyhidrinic aldehyde, formed during advanced oxidation of lipids, released in an acid environment, reacts with phluoroglucine, giving a colored compound. Color intensity is proportional to the quantity of epyhidrinic aldehyde. Kreiss reaction will be negative or positive and regardless of the intensity of the reaction - intensity of developed colour, that foodstuff should be excluded from the food circuit.

For laboratory need, validation of Kreiss test had been carried out for the puprose of esstimation of the method characteristics. Validation was performed on samples of sunflower and olive oil, palm an pork fat, fat extracted from ready meals and cakes and same tested, unrancid samples spiked with those rancid confirmed, and vanilline spiked, in total 88 tests.

In study are estimated: Scope and extent of test, assessed as applicable for all type of samples and all concentracions – rancidity levels. Method is not selective and specific due to vanilline interference. Precision as false negative rate is estimated as 3,7%, precision as false positive rate 0,0% and respectively, sensitivity as 96,3% and specificity as 100%

Key words: Lipids, Rancidity, Kreis, epyhidrinic aldehyde, validation,

18. SADRŽAJ CEZIJUMA U MINERALNIM VODAMA IZ PROMETA

18. THE CONTENT OF CASIUM IN MINERAL WATERS FROM THE MARKET

Svetlana Petrović, Boban Petrović,

Public Health Institute Nis

Mineral waters are largely represented in the daily diet of people. There are in the market a large number of different mineral water whose mineral content is significantly different each others. The concentrations of some anions and cations are prominent on the labels.

Many of them contain in cesium in their composition, which together with their compounds contributes to treat nervous system, multiple sclerosis and epilepsy. Noteworthy is the regulation of blood pressure. This element affects the increase in the activity of sex hormones.

As the cesium content is not declared on the labels of mineral water, the aim of this study was to determine the cesium content in some mineral waters from the market and to show that the mineral waters are and in what quantity contain cesium.

We analyzed 13 mineral waters. It was found that lithium is presented in 90% of the samples and that significant amounts of cesium found in waters with high mineral content (about 1 mg Cs / L).

19. BALNEOLOŠKE KARAKTERISTIKE VODE NIŠKE BANJE

19. BALNEOLOGICAL PROPERTIES OF NISKA BANJA WATER

Biljana Ljubenović, S.Gligorijević, Ivana Kamenović

Public Health Institute, Nis

Balneotherapy is a treatment which uses therapeutic properties of mineral water, i.e. healing water. The effect of balneotherapy is dual - physical and chemical. Physical effect is prevailing, and includes thermal effects, the effect of hydrostatic pressure, water resistance, and relaxation of the human body. Chemical effect is caused by substances that are dissolved in water, i.e. ions. This paper is an attempt to look at the physical-chemical characteristics of Niska Banja water, which is one of the oldest and most famous spas in Serbia, through balneological properties.

Mineral waters are waters that contain more than 1 gram of dissolved mineral substances per liter of water (silicon, selenium, radon, sulfur) or whose temperature is above 20 ° C and contain small amounts of substances with strong physiological action (radioactive radon, iodine). Water analysis represents the determination of its chemical, gas, and radioactive microbial composition and physical properties. Depending on the research objectives, the following is determined in water:

physical and organoleptic properties (temperature, color, taste, odor, turbidity, conductivity, density), content of dissolved mineral, organic and radioactive substances, content of dissolved and free gases. Basic indicators of chemical composition (general mineralization conductivity, pH and various types of hardness) and microbiological and isotopic composition.

The contents of chemical analysis and the degree of accuracy of their results is determined based on the tasks and stages of the research. The content of some mineral components of chemical composition is expressed in mg/l, mg eqv / l and mg eqv %. At higher mineralization (brine water), the contents of the components is expressed in g/kg, and micro-components in µg/l. The content of dissolved gases is expressed in mg / l or %.

To systematize the results of the chemical analysis of the analyzed mineral water, the following are used: tables, different types of formulas and diagrams. Depending on the purpose of research, the table shows the contents of the main ions, metals, dissolved and free gases, radioactivity, mineralization and certain physical properties. As far as an analytical presentation of the results of chemical analysis is concerned, Curl formula is often used in a modified form.

Physical-chemical analysis of water was carried out in an accredited laboratory of the Public Health Institute Nis, while the radioactivity was conducted in the Institute of Occupational Medicine in Nis, Department of Radiation Protection.

Based on the complete results of testing the mineral water of Niska Banja, it is concluded that according to its physical-chemical properties it belongs to the category of calcium-hydrocarbon oligomineral hyperthermia.

20. ZDRAVSTVENA ISPRAVNOST VODE ZA PIĆE IZ SEOSKIH
VODOVODA U SRBIJI U PERIODU 2002.-2010. GODINA
**20. DRINKING WATER QUALITY FROM LOCAL SUPPLY SYSTEMS
IN SERBIA, 2002-2010**

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Drinking water quality from the local water supply systems in Serbia were shown, with the aim to assess microbiological and chemical quality of water. Water sampling and data processing were performed by the network of institutes of public health (IPH) and IPH of Serbia, as a part of Programme for protection population of contagious disease. Data were obtained from the Annual reports and Evaluation of Programme. According to microbiological criteria an average of 5991 and 11 248 water samples were analysed from Central Serbia and Vojvodina, respectively. According to chemical criteria an average of 5965 and 5964 water samples were analysed from Central Serbia and Vojvodina, respectively. Data analysis showed that on average 27,5% and 25,6% of samples did not comply with microbiological criteria in Central Serbia and Vojvodina, respectively. That is above World Health Organization recommendations (5%), but with significant decreasing trend ($p < 0,001$). According to chemical criteria on average 21% and 75% water samples did not comply, with significant decreasing trend in Central Serbia and increasing trend in Vojvodina ($p < 0,001$). Microbiological incorrectness may affect health of population in Central Serbia and Vojvodina, despite of decreasing trend, as well as high percentage of chemical incorrectness in Vojvodina. Improving monitoring and methodology is needed.

Key words: local supply, drinking water quality

21. HIGIJENSKA ISPRAVNOST VODE ZA PIĆE U ŠKOLSKIM I
PREDŠKOLSKIM USTANOVAMA U CG
**21. HYGIENIC OF DRINKING WATER IN SCHOOLS AND
PRESCHOOL INSTITUTIONS IN MONTENEGRO**

Ivana Joksimovic, Z.Đorđević, LJ.Teric

Public Health Institute of Montenegro

By the Regulation on hygienic water (Official no.42/98), Article 7, it's been provided that in facilities for water supply of educational organizations must be performed four basic testing of drinking water, during the school year.

The goal of procedure is to evaluate risk level, based on the laboratory testing, and to give proposition of measures for its reduction and eventual complete removal, all in order to avoid the emergence and spreading of infectious diseases.

Water sampling was carried out by the responsible people of the Public Health Institute, in accordance with the Regulation on method of sampling and laboratory analysis of drinking water (Official Gazette no. 33/87).

The Public Health Institute in the course of 2011 analyzed a total of 226 samples of drinking water, taken from school and preschool institutions. During the writing of this report was used Regulation on hygienic water (Official Gazette no. 42/98 and 44/99), and also the annual reports on hygienic quality of drinking water from the Center for Environmental Health (Public Health Institute of Montenegro).

Key words: drinking water, water testing, infectious diseases

22. PETOGODIŠNJE ISKUSTVO U PRIMENI RAČUNARSKOG
PROGRAMA ZA OBRADU PODATAKA O UZORCIMA VODA
**22. FIVE-YEAR EXPERIENCE IN APPLIACATION OF COMPUTER
PROGRAM FOR PROCESSING DATA ON SAMPLES OF WATER**

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¹Public Health Institute of Belgrade

Introduction: A computer program for processing data on samples of water is in use in the Public Health Institute of Belgrade since 2008. The aim of introduction of this program is to provide software support at all stages of the management of water samples, from their admission to the issuance of test reports.

Objective: The aim of this paper is to point out the significance of computer program for management of samples of water, with special emphasis on the ability to search the database and to export data to programs for statistical analysis.

Methods and results: Between June 2008. until June 2012. the program has treated more than 65.500 samples of drinking water, water from swimming pools, surface water, groundwater, wastewater and other types of water analysed upon requests of the customers. The database has been formed with the ability of searching by a number of criteria. The export of data in Word and Excel has been enabled, as well as the parallel issuance of testing reports in Serbian and English language.

Conclusion: The application of computer program for processing data on water samples has greatly improved and facilitated processing of water samples and provided easy and quick search of the database, which is an essential element of each monitoring program.

Key words: computer program, water

23. ŽIVOTNA SREDINA I NJENA ZAŠTITA KAO PRIORITETI KVALITETA ŽIVOTA I ČOVEKOVE EGZISTENCIJE I OPSTANKA **23. ENVIRONMENT PROTECTION AND ITS PRIORITIES AS QUALITY LIFE AND HUMAN EXISTENCE AND SURVIVAL**

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Of environmental culture is not an easy task, especially when considering that the social behavior prevailed for decades principle relationship with nature, which had a utilitarian character. Man nature to use, modify and adapt to their needs, often to the point of unconsciousness and threatens their existence and survival.

Author is trying to answer the questions related to possible sources of pollution and ways; various biological, physical, chemical, social, economic and environmental factors affecting human health. Factors that influence the formation and change of environmental awareness, attitudes and behavior, such as culture, socialization, education and many others, pointing out that research in this area is not only conducted within university institutions, but are increasingly becoming an integral part of various projects governmental organizations and NGOs. None of the existing environmental problems can not be completely solved unless there is a change in human behavior as much as used a method derived from research in the natural sciences, if human behavior is unchanged, again and again we encounter the same or even a new and dangerous problems, both in man and to society in general.

In this paper, special emphasis is given to the question whether the concept of sustainability and the concept of quality of life mutually reconcilable, citing research on the health status of the population in Serbia. Health Policy, in its domain, the always been part of the overall policy of a certain community, because health problems affecting the quality of life of individuals, reducing their ability to work and function, and health policy and directed its activities just to overcome these problems. In this paper, among other things, suggests that the generally accepted model of development - sustainable development - aimed at not only protecting the environment but improve the quality of life, because they are committed to meeting the needs of present and future generations.

People's health is a matter of public interest and is the most important resource for development.

Key words: environment, quality of life, environmental quality, environmental awareness, sustainable development, sustainability

24. PRAĆENJE STANJA ŽIVOTNE SREDINE TOKOM GRADNJE MOSTA
PREKO SAVE NA ADI CIGANLIJI
**24. MONITORING OF THE STATE OF THE ENVIRONMENT
DURING CONSTRUCTION OF THE BRIDGE OVER THE RIVER
SAVA AT ADA CIGANLIJA SITE**

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Public Health Institute Belgrade

Introduction: Construction of the bridge over river Sava at Ada Ciganlija represents one of the most significant infrastructure projects which have been realized in Belgrade in the last few decades. Considering the location and direction of the bridge as well as approach roads to be constructed, it was expected to have potential impact on the environment and people's health in the zone of construction.

Aim: The aim of this paper is to present the methodology of performed Monitoring and to present the results of laboratory analysis of the media. The results are evaluated for the period from June 2009 till December 2011.

Material and method: Monitoring and Program of the media and parameters to be monitored were performed in accordance with National regulations covering the field of protection of the environment and with The Study of Environmental Impact Assessment.

Results: The paper gives the results of laboratory analysis of samples of air, surface and ground waters, soil and river sediment during the period which covers the construction works of the bridge. Separately are presented six months results and results from June 2009 to December 2011.

Conclusion: Monitoring of the Environment during the construction works of the bridge over river Sava was important indication of the extent of the changes in the environment and at the same time enabling if needed to undertake preventive or technological measures to reduce or minimize the pressure on the environment.

Key words: Monitoring, Bridge Ada Ciganlija

25. POREĐENJE KONCENTRACIJA RESPIRABILNIH ČESTICA PRIKUPLJENIH TOKOM SEZONSKIH KAMPANJA U URBANIM ZONAMA NIŠA I BORA, SRBIJA

25. A COMPARISON OF INDOOR AND OUTDOOR PM₁₀ AND PM_{2.5} CONCENTRATIONS COLLECTED DURING SEASONAL CAMPAIGNS IN URBAN AREA OF NIŠ AND BOR, SERBIA

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Particulate matter (PM) in indoor and outdoor ambient is one of the main air pollutants, receiving attention due to its documented adverse effects on human health. For health impact assessment and successful implementation of PM mitigation strategy it is necessary to collect enough data at local level.

Collecting PM data were performed between September 2009 and July 2010. PM levels were determined using the European reference samplers (Sven/Leckel LVS3), inlets for PM₁₀ and PM_{2.5} and quartz filters. The 24-h samples were collected simultaneous in indoor and outdoor ambient during heating and non-heating seasons through consecutive campaigns in duration each of 40 days. Buildings located in central zones were used for sampling indoor air, the kindergarten in Bor and the amphitheater at faculty in Niš.

During heating period in both towns 24-h mean outdoor PM₁₀ levels were over 50 µg/m³, while mean indoor PM₁₀ were less than 50 µg/m³. 24-h mean outdoor PM_{2.5} in Bor and Niš was higher than 40 µg/m³, it was more than 70% over the WHO 24-hour mean guideline value of 25 µg/m³. During non-heating period 24-h mean concentrations were below target values. Beside PM sources such as traffic and industry, it was shown the considerable contribution of the local heating sources together with influence of meteorological conditions to PM levels in ambient air in the observed towns.

Key word: air pollution, health effects, PM₁₀, PM_{2.5}, heating period

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26. KVALITET VAZDUHA ŽIVOTNE SREDINE I PRIMARNA HIPERTENZIJA U GRADU NOVOM SADU

26. OUTDOOR AIR QUALITY AND PRIMARY HYPERTENSION IN THE CITY OF NOVI SAD

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Aim: Aim of the work is to determine dependents of outdoor air quality, especially gaseous sulfur-dioxide (SO₂) and nitrogen-dioxide (NO₂), as well as microclimate parameters (air temperature – AT; air pressure – AP) with daily number of hospital admissions due to primary hypertension (PH) of whole population.

Material and methods: The investigation was performed for the period 01.01.-31.12.2011. For determining the dependents there were used data from Public Health Institute of Vojvodina and Republic Hydrometeorological Institution. There were collected 365 average daily concentration of SO₂, NO₂, AT and AP, while the number of hospital admissions due to PH of whole population for the 2011 was 767. General linear regression model was used for determine relative risk (RR) and confidence interval (CI) of depended variable (daily number of hospital admissions due to PH of whole population).

Results: The daily number of hospital admissions due to PH of whole population is not statistically dependent with average daily concentration of SO₂ and NO₂, but there is high statistical dependents with AT (p=0.017) and AP (p=0.000). RR for the daily number of hospital admissions due to PH of whole population at average AP of 1019.17 hPa (±7.01) is 3.8% (CI:1.023-1.052) and at average AT of 11.68oC (± 9.10) is 2.4% (CI: 1.004-1.043).

Conclusion: The daily number of hospital admissions due to primary hypertension of whole population in the city of Novi Sad is statistically dependent on air temperature and air pressure, but not with average daily concentration of SO₂ and NO₂.

Key words: Environment and Public Health, Risk, Hypertension

27. IZLOŽENOST PASIVNOM PUŠENJU I RESPIRATORNO ZDRAVLJE ŽENA

27. EXPOSURE TO PASSIVE SMOKING AND RESPIRATORY HEALTH AT WOMEN

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Introduction: Passive smoking has become a major concern worldwide because of its very important influence on human health. Respiratory tract is the first to suffer in passive smoking exposure, which leads to appearance of respiratory symptoms and diseases.

Aim: The aim of our study was to examine of passive smoking influence to appearance of respiratory symptoms and disease, independently of outdoor air pollutants exposure.

Material and Methods: The survey was conducted in period of May to August 2007.y. on 653 women, aged 33.87 ± 3.0 , non-smokers and they were not professionally exposed to air pollution. Standard questionnaire prepared by WHO was used in the study. Questionnaire includes questions about prevalence of respiratory symptoms and respiratory diseases which were diagnosed by physicians in women in the past 12 months.

Results: Respiratory symptoms were significantly more common in women exposed to passive smoking, especially cough with cold (1.48; 95% CI:1.09-2.01) and congestion and/or phlegm with cold (1.45; 95% CI:1.08-1.95). Bronchitis was more detected by physicians in women whose husbands smoke at home, which was significant for statistics (1.66; 95% CI:1.23-2.23).

Conclusion: Passive smoking may be a significant etiologic factor in the appearance of some respiratory symptoms and diseases.

Key words: Passive smoking, women, respiratory symptoms, respiratory diseases, indoor air pollution

28. ABDOMINALNE KOLIKE KAO POKAZATELJ SATURNIZMA KOD OSOBA IZLOŽENIH RAZLIČITIM NIVOIM ZAGAĐENJA

28. ABDOMINAL COLICS AS SATURNISM INDICATOR IN PERSONS EXPOSED TO DIFFERENT LEVELS OF POLLUTION

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The research was conducted within the project TR 37016 Ministry of Education, Science and Technological Development of Republic of Serbia

Introduction. Disorders resulting from chronic lead poisoning can be grouped into three clinical types of saturnism: gastrointestinal, neuromuscular and encephalopathic. The gastrointestinal type most often occurs in the form of lead colics, which are usually accompanied by other symptoms and signs. Persons exposed to pollution do not always react the same to it, and the symptoms of poisoning are not always consistent with laboratory indicators.

Objective. The paper's aim is to determine the relationship between the presence of abdominal colics in exposed subjects with the level of environmental pollution.

Materials and Methods. The study included 300 subjects, divided into three groups according to their place of residence, and in two groups according to the degree of environmental pollution - group I with 95 and group II with 205 examinees. The degree of environmental pollution was determined by an appropriate methodology, and by specially created questionnaire the presence and characteristics of pain were identified.

Conclusion. Our study found that in the group of examinees who stay in the environment that is more polluted, 53 of them (55.8%) had abdominal colics, while in the second group 33 (16.09%) of the examinees had the same colics. By testing the frequency of pains in the stomach, we found that statistically significantly more ($\chi^2=48.02$, $p<0.001$) abdominal colics occur in examinees who had higher levels of lead in the blood and stay in the environment with a higher degree of pollution.

Key words: saturnism, gastrointestinal type, pain, environment.

29. UPRAVLJANJE MEDICINSKIM OTPADOM U ZDRAVSTVENIM USTANOVAMA U CRNOJ GORI

29. MEDICAL WASTE MANAGEMENT IN HEALTH CARE INSTITUTIONS IN MONTENEGRO

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Objective: Representation of the medical waste management in health institutions in Montenegro.

Methods: Medical waste management in health institutions in Montenegro has been observed based on the inspection of the Plans for medical waste management and analysis of the answers obtained by the questionnaire which was used at trainings held in Podgorica, Bar and Berane, as part of the project »Strengthening the system for medical waste management in health institutions in Montenegro«. There were 130 health workers attending the trainings from all public health institutions in Montenegro, as well as the representatives of private health institutions.

Results: Most health institutions have developed Plans for waste management; however the employed are not entirely informed about their contents and obligations ensuing from them. In most health institutions daily quantities and types of waste are not determined, and classifying the waste is experienced as additional burden by health workers. Instructions for handling different types of waste and measures of precaution are not available in most health institutions.

Conclusion: Although the problem of medical waste management in health institutions in Montenegro has been made a current issue lately, an additional training of the staff in health institutions is required in order to avoid risk to health and environment.

Key words: medical waste, medical facilities, training

30. STUDIJA O POSTUPANJU SA LEKOVIMA KOJIMA JE ISTEKAO ROK
TRAJANJA U POPULACIJI PACIJENATA OPŠTE LEKARSKE PRAKSE
**30. STUDY ABOUT PROCEDURE WITH DRUGS WHICH EXPIRED IN
POPULATIONS OF PATIENTS IN GENERAL PRACTICE MEDICINE**

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Introduction. At home there are often the drugs which are expired. Insufficiently is explored what patients do with medicines that have expired.

Objective. The aim of this study was to examine the knowledge and procedure of patients in general practice medicine with medicines that have expired.

Method. The research was conducted as cross-sectional study. The sample size of 408 respondents was formed by the type of appropriate sample of patients who were treated at the Health Centre in Pančevo in the period from January to April 2012. In the study was used an anonymous questionnaire that includes socio-demographic variables and variables related to knowledge and procedure with medicines that have expired.

Results. From the total number of respondents 373 of them (91.2%) responded that owns medicines which are expired. Of the respondents, 325 (80%) responded that medicines have less detrimental effect upon the expiration, and only 24% (98 respondents) knew that in accordance with legal requirements medicines must be disposed in special containers at the pharmacy. The largest percentage of respondents in rural and urban areas (87.2% vs. 86.0% respectively) drugs dumped in trash or toilet. In the village more often burned medications (12.2% versus 4.1% in the city), while in urban areas more often medicines returned to pharmacies (9.8% versus 0.6% in rural areas) what is statistically significant difference ($p < 0.001$).

Conclusion. Respondents in the population of patients in in general practice medicine do not comply with the medication that is expired in accordance with legal regulations. It is necessary to improve health education in order to reduce this phenomenon and to install in pharmacies special containers for disposal of medicines that have expired.

Keywords: drugs that have expired, home pharmacy

31. IZLOŽENOST BUCI I ZDRAVLJE

31. NOISE EXPOSURE AND PUBLIC HEALTH

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Long term noise exposure is associated with a number of effects on health and well-being. These include responses such as annoyance, sleep disturbance, disturbance of daily activities, and physiological responses such as hearing loss, hypertension, and ischemic heart disease. The nuisance effects of noise are difficult to quantify, and people's tolerance to noise levels and different types of noise vary considerably.

The present paper is a review of the epidemiological research conducted during the last 10 yrs. In this review, we discuss the non-auditory effects of community noise on exposed people. Non-auditory effects due to noise can be defined as “all those effects on health and well-being which are caused by exposure to noise, with the exclusion of effects on the hearing organ”

Many studies have shown that there is objective and subjective evidence for sleep disturbance by noise. Noise exposure during sleep which causes frequent arousal leads to decreased performance capacity, drowsiness and tiredness during the day. Also frequent occurrences of arousal triggered by nocturnal noise leads to a deformation of the circadian rhythm which have a deteriorating effect on health. Exposure to noise disturbs sleep proportional to the amount of noise experienced in terms of an increased rate of changes in sleep stages and in number of awakenings. Noise has been associated with important cardiovascular health problems also. In 1999, the World Health Organization concluded that the available evidence suggested a weak association between long-term noise exposure above 67-70 dB (A) and hypertension.

Key words: community noise, non-auditory effects

32. TEMPERATURA VAZDUHA U ŠKOLAMA KAO RIZIK PO ZDRAVLJE ŠKOLSKE DECE U NIŠU

32. AIR TEMPERATURE IN SCHOOLS AS A HEALTH RISK OF SCHOOL CHILDREN IN NIS

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Introduction: Health schoolchildren depend on both the physical and mental development of children, and to a considerable extent on the school environment in which children live. The most common factors that affect the health of the children attended school in the middle of the microclimate in the school premises such as temperature, humidity and light.

Objective: The aim of this study was to investigate the effect of air temperature in schools on the health of school children.

Methods: The study was carried out in air temperature in ten primary schools in the city of Nis. Air temperature measuring device was performed by Thermo hygrometer type "test" 608-H1, the three measuring points in each school: classrooms on the ground floor, classrooms on the first floor and gym. Measurement of these shall be provided by the appliance is turned chest height (1.2 to 1.5 m above the floor), a few seconds in the hand and on the screen directly read a microclimate parameters. The measured temperature is expressed in ° C (degrees Celsius).

Analysis of morbidity school children with special reference to respiratory disease was made on the basis of the data of the report of the Health of Nis diagnosed diseases in the period since 1998. by 2008

Results: All measurements were performed during the heating season. The average air temperature in the classrooms on the ground floor was 21.15 ° C, in the classrooms upstairs 21.44 ° C in gyms 19.1 ° C. The measured values have a slight deviation from the recommended standards for school facilities is 20 ° C and 16 ° Gym Hall C. The obtained values were compared with the requirements of the air temperature of individual rooms in schools (Official Gazette - Education Gazette no. 4/90). Number of students with disabilities who are breathing in this period give a specific picture of a gradual decrease, with maximum values in 1998 (87.79%). The trend of respiratory diseases decreased during the study period.

Conclusion: The air temperature was evaluated based on given measurements of air temperature meets the sanitary requirements for microclimate school premises. Respiratory diseases are the leading place ranking in the structure of outpatient morbidity school children. By monitoring the temperature of the air in the school environment can affect poboljšanje health of school children. Since the testing was done in urban schools need to initiate research and extension to rural areas.

Keywords: temperature, air, school children

33. ZDRAVSTVENI ZNAČAJ PRIMENE FIZIČKE AKTIVNOSTI KOD
OSOBA SA MENTALNIM POREMEĆAJIMA
**33. HEALTH BENEFITS OF INTEGRATING PHYSICAL ACTIVITY
AMONG PATIENTS WITH MENTAL DISORDERS**

Lazarević Konstansa

Public Health Institute, Nis

Physical activity may prevent risk of chronic conditions in general population and improving mental health. Obesity is common among patients with mental disorders, as results of sedentary lifestyle, poor diet and medication induced weight gain. Also mortality from obesity related conditions (cardiovascular disease especially) are higher in those with mental disorders.

The aim of this paper was to point out the health benefits of integrating physical activity among patients with mental disorders.

The research methods have entailed a thorough exploration of literature available at research data bases (Medline, HINARI etc).

Meta analyses showed effects for exercise similar to those found in psychotherapeutic intervention, and markedly reduces the chance of subsequent somatic illnesses among patients with depression.

Exercise can alleviate secondary symptoms of schizophrenia: depression, low self-esteem and social withdrawal. Regular exercises have healthful effects (as part of lifestyle modification program) on both the physical and mental health and well-being of individuals with schizophrenia. Exercise training also may help improve anxiety and anxiety disorders symptoms among patients.

To adequately implement exercise interventions the following factors need to be taken into account: the type and severity of the mental disorder; current mental health treatments; chronic-disease conditions and physical abilities.

Physicians and mental health professionals should ask and encourage patients to participate in regular physical activity.

Key words: physical activity, mental health

34. PREVENCIJA POSLEDICA LUKSACIJE TEMPORO -
MANDIBULARNOG ZGLOBA PILOTA I PADOBRANACA VOJSKE
SRBIJE FIZIKALNIM AGENSIMA

**34. CONSEQUENCES PREVENTION OF TEMPOROMANDIBULAR
LUXATION OF SERBIAN MILITARY PILOTS AND PARACHUTTES
JOINT BY USING PHYSICAL AGENS**

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The goal of research was to check functional restitution of iatrogenic subluxation of temporomandibles joint (LTMJ) with normalizing of mastication post malextraction of mandibles molar, after applying physical efficients as shortwave diathermacy and sonophoretic.

The sample concluded 14 pilots end parachutist, age 22-52 with and clinical and ultrasonographic approved subperiosteal odontogenic LTMJ within malextraction of mandibles molars and premolars divided in two groups of 7 examiners.

Using methods: For first group, it was applied bipolar shortwave diathermacy technique (SWD) $\lambda = 12$ m; $\nu = 27$ Mhz with 3cm distance between skin surface and electrode during 15min., then Gel Deep Relief sonophoretic by sonde $d = 2,5$ cm long 6 W/cm² in 6min. Application of mechanical mouth opener "heyster" in series of 12 days few times daily was the next step in treatment. For second group it was applied only mechanical mouth opener "heyster" in series of 12 days and hot bandage on TMJ.

Followed variables were mandibles opened angle, measured by protractor in degrees and internal scale of pain, graduated from 1-5.

Research results : were tested by using Student t-test for small pair of examples, and it was concluded: significant increase in amplitude of mandibles movement and decrease of painfully sensations in group with applied SWD, sonophoretic and mechanical mouth opener "heyster" according to the group used only mechanical mouth opener "heyster" and hot bandage on TMJ.

Conclusion: physical efficients as SWD and sonophoretic could influence on significant restitution in function of LTMJ and could be recommended as usable method in clinical praxis.

Key words: luxation of temporomandibles joint, physical therapy.

35. PREVENTIVNI TRETMANI ZUBNIH PROCESA LETAČA SRBIJE JONTOFOREZOM

35. PREVENTIVE TREATMANS DENTAL PROCESSES OF SERBIAN PILOTS BY USING IONTOPHORESIS

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The goal of research was to heal sub end periapical odontogenic infections on mandibles incisive by electrophoresis in aim to prevent apical dental amputation.

The sample, concluded 20 patients the both gender, age from 24-50 with radiological and clinical approved subperiosteal odontogenic infections on mandibles incisive, divided in two groups of 10 examiners.

Using methods: For first group, it was applied 1ml 10% solution of KJ in the canal base of a tooth with inserted endodontic needle as cathode and anode soaking by isotonic solution of NaCl with submandibles application dose of 100mg metaciklin. Intesity of electric current by individual sensitivity was in X caliber of 0,85mA during 12min. (biodose of 10,2mAmin) in 36 days, every 3th day by electrophoresis. For second group was applied every 3th day in turn iodophormiumchlumsky and Ca(OH)₂ paste during 36 days. Final results were introspected radiological and simptomatic by internal scale of pain, graduated from 1-5.

Research results: Radiological lighting decreased in range $X \pm SD$ from 9,7mm to 3,5mm within $t = 4,58$ and $p < 0,005$ but pain sharpness decreased in range from $X \pm SD = 4,85$ to $X \pm SD = 1,84$ (internal scale from 1-5) and $t = 3,45$ and $p < 0,005$ for the first group of examiners. There was no significant difference for biomedical researched appearance for the second group of examiners.

Conclusion: Electrophoresis application of drugs in subperiosteal odontogenic infections of mandibles incisive significantly affects lowering of inflammation and could be recommended as usable method in clinical dental praxis.

Key words: electrophoresis, odontogenic infections ,structural prevention.

36. SANITARNO-HIGIJENSKO STANJE U OBJEKTIMA ZA ODMOR I
REKREACIJU DECE U ZLATIBORSKOM OKRUGU
**36. SANITARY - HYGIENIC CONDITIONS IN THE FACILITIES FOR
RECREATION OF CHILDREN IN THE ZLATIBOR DISTRICT**

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Facilities for recreation of children are placed in the beautiful countryside locations of Zlatibor District. The main task of these facilities in addition to games, entertainment and educational programs, is providing favorable conditions for children in accordance with the requirements of health.

The aim of this project, which is based on the analysis of parameters of sanitary and hygienic facilities for the recreation of children in the Zlatibor District, is to give a realistic view of sanitary and hygienic conditions in these facilities and to assess the healthy stay of children in them.

Metodology: The investigations included sanitary-hygienic state of the rooms for the stay of the children by the local inspection method, as well as the sanitary and hygienic condition of the kitchen block by the swab analysis of the dishes, utensils, work surfaces and hands of staff employed in them. This research was conducted in 10 facilities for recreation of children in the Zlatibor District in the year of 2011 as well as in the period between January and June of 2012. Swab sampling was performed according to annual plans and programs of the Center for Hygiene. The tests were performed using standard bacteriological methods and the accuracy score was performed on the basis of existing legislation. For that period the obtained data for sanitary and hygienic conditions of these objects according to epidemiological indications were also analyzed.

Results: In the year of 2011 and the period between January and June of 2012, 638 swab samples of the dishes, utensils, work surfaces and hands of staff employed were analyzed in the kitchen block of the facilities for the recreation of children. 32 swabs (5.01%) did not meet the current legislation. According to epidemiological indications, the bacteriological analyses of 60 swabs were performed and they all correspond to the standard values, as well as 97 food items, of which 9 (9.28%) do not correspond to the norms prescribed by the Law on Food Safety (Official. Gazette 41/2009) and by Regulation on the general and special conditions of hygiene of food at any stage of production, processing and transport (Figure. Gazette 72/2010).

Conclusion: Sanitary and hygienic conditions in the facilities for recreation of children in the Zlatibor District is satisfactory. Based on the results of microbiological analysis of food, it can be concluded that the diet during their stay in these facilities cannot be considered as a risk factor for food-borne infection.

Key words: facilities for recreation of children, Zlatibor District

37. ANALIZA UTICAJA TOKSIČNIH METALA NA KVALITET OTPADNE
VODE U METALOPRERAĐIVAČKOJ INDUSTRIJI
37. ANALYSIS OF THE EFFECTS OF TOXIC METALS ON THE
WASTEWATER QUALITY IN METAL INDUSTRY

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Abstract: Surveys conducted in the framework of the investigated period of time from 2001 to 2011 were aimed at analyzing the impact of toxic metals (Pb, Cd, Ni, Cu, Zn, Cr, Fe, Al) on the quality of wastewater in metalworking industry. Toxic metals as pollutants are not biodegradable, therefore they accumulate in flora and fauna in surface water, thus reaching the food chain and polluting the environment. Toxic metals in waste water systems of reference were determined by flame atomic absorption spectrometry. Based on the test results, a statistical data analysis was performed using software packages Excel and Matlab. The values of copper, zinc and lead in the waste water of the first reference system, during the study period of the first quarter of 2002, deviate markedly from the maximum allowed concentration. A slight increase in the value of copper concentration was observed for the period of the first quarter of 2008, while the other values of toxic metals concentration were within the allowed range. The values of the concentration of toxic metals in the waste water of the second reference system during the study period were within the permissible range.

Keywords: metal industry, waste water, toxic metals.

38. MANAGEMENT OF PHARMACEUTICAL AND CHEMICAL WASTE IN HEALTHCARE INSTITUTIONS IN SERBIA AND THE METHODS OF ITS DISPOSAL

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Healthcare waste arising from human healthcare can according to the Waste Catalogue for the Republic of Serbia (Official Gazette of the RS no. 56/2010) , be divided into 10 different types of waste. The correct and safe handling of these waste types, especially the two hazardous waste streams - pharmaceutical and chemical waste - requires special attention from healthcare workers in their everyday work.

Objective: To determine the current status of management of pharmaceutical and chemical waste in the healthcare sector and to identify interventions for improvement.

Materials and methods: The study was performed using questionnaires sent to healthcare institutions and laboratories and interviews conducted in healthcare institutions.

Results: In total, the public healthcare sector generates approximately 7 tons of pharmaceutical annually and at the moment there about 300 tonnes of pharmaceutical waste is stored in the public healthcare sector .

Chemical waste is largely generated in medical, clinical-biochemical laboratories, but in x-ray departments as well. Other types of chemical waste produced in healthcare institutions include fluorescent tubes, batteries and other waste. The total quantity of chemical waste produced in healthcare institutions in Serbia amounts to approximately 1,700 tons per year, including photochemicals (fixer, developer) and approximately 350 to 400 tons of photochemicals alone are generated annually in healthcare institutions in Serbia.

Conclusion: Substantial amounts of pharmaceutical and chemical waste are produced in the healthcare facility on an annual basis.

The management of these waste streams is not fully in line with EU standards but further improvement is planned and will be implemented.

Key words: *healthcare waste management, pharmaceutical waste, chemical waste, waste catalogue*

39. KVALITET VODE ZA PIĆE U OPŠTINI PROBIŠTIP U 2011 GODINI

39. QUALITY OF DRINKING WATER IN THE MUNICIPALITY

PROBISTIP 2011 YEAR

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Purpose of paper: To see what kind of water is used Probistip by the residents of the municipality in 2011 and which were the most common causes of pollution of the drinking water.

Method: Weekly, monthly and annual reports are used for monitoring the condition of water supply and quality of drinking water in the territory of the municipality Probishtip. A descriptive-analytical method was used.

Results: In the year 2011, 744 analysis of drinking water were made. Of that 372 physico-chemical analysis and 372 for bacteriological analysis were made. Total 57 of which 22 physico-chemical and 35 bacteriological didn't match. From the city water tested were 196 analysis after 98 to physico-chemical and bacteriological analysis. The physico-chemical analysis didn't match with two samples and the absence of chlorine and bacteria while all samples were correct.

In villages that have local plumbing, made analysis of the 248 to 124 physico-chemical and bacteriological analysis. Of which 14 didn't match. 4 of them the reason was Echerichia coli, the cause in 7 Sulfored. clostridium and in 3 the cause was Prot.spp. Physico-chemical non-compliance was found in 7 analysis, 2 of them the reason was the absence of chlorine and in 5 of them the presence of nitrite. In settlements that use other types of water supply facilities (taps, wells, pumps, springs, etc.) total analysis of the 268 made 134 for physico-chemical and bacteriological analysis. Bacteriological non-compliance was found in 21 samples. In 11 was found Escherichia coli and in 10 causes was Prot.spp, while physico-chemical non-compliance was found in 13 analysis, 9 due to the presence of nitrate and 4 due to the presence of chloride.

Conclusion: Overall quality of drinking water in the municipality Probistip unsatisfactory because about 7.6% of analysis were non-compliant.

Key words: Water, analysis, Escherichia coli, chlorine

40. VOCE I POVRCE U PREVENCIJE HIPERTENZIJE**40. FRUIT AND VEGETABLES IN PREVENTION OF HYPERTENSION**

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Center for Public Health Bitola, R.Macedonia

Introduction: Poorly consumption of fruit and vegetable is among top 10 risk factors who contribute for mortality from different causes, as reports World Health Report 2003 (WHO). 2,7 million lives can be saved every year with enough consumption fruits and vegetables. Fruits and vegetables as part of daily diet can help in prevention of cardiovascular diseases.

Objective: See the connection between consumption fruits and vegetables and hypertension

Material and methods: Comparative study with questionnaire for fruits and vegetables consumption habits in comparison with hypertension. 95 individuals (45 women and 50 men) are involved in this study.

Results: Persons with hypertension answered that consumed less or no vegetables (45% and 55%). Persons with hypertension answered that consumed less of no fruit (33,4% and 40,1%). Persons who less or don't consumed 100% natural fruit juice have hypertension (44,3% and 51,1%). Persons with hypertension who lived on country and didn't consumed fruit and vegetables, were 65%, not like persons who lived in city(70,3%)

Conclusion: Fruits and vegetables are necessary for prevention of chronic disease, including hypertension. Also, regular blood pressure check outs are needed. These 2 preventive measures and their promotion are crucial for prevention of hypertension, whom itself brings serious complications and disrupted health.

Key words: fruit, vegetables, hypertension, consumption, blood pressure, comparative study

41. RADIOLOGICAL IMPACT OF INDOOR RADON AND OUTDOOR TERRESTRIAL RADIOACTIVITY ON THE POPULATION IN REPUBLIC OF MACEDONIA

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This paper presents the results of the evaluation of radiological impact due to indoor radon and to outdoor terrestrial radiation. The measurements of indoor radon concentration were made in 437 dwellings within 8 statistical regions using CR-39 track detectors. The exposure period was from December 2008 to December 2009. The arithmetic and geometric mean values of the annual effective dose due to indoor radon exposure to radon in the dwellings were estimated to be $(2.6 \pm 2.1)\text{mSv y}^{-1}$ and $2.1/*1.9\text{mSv y}^{-1}$, respectively. Those values were found to be higher than the world's mean value (1.15mSv y^{-1}).

In order to estimate an annual effective dose which is expected to be received by the general public due to outdoor terrestrial radioactivity, the surface soil (0-20cm) from 213 locations during 2007 -2010 was collected. After pre-treatment, the samples were measured by gamma spectrometry. The estimated annual effective dose due to natural radionuclides: ^{226}Ra , ^{232}Th and ^{40}K in the soil is $(83\pm 29)\mu\text{Sv y}^{-1}$ or $79/*1.4\mu\text{Sv y}^{-1}$.

The analysis of variance showed statistically significant differences between annual doses due indoor radon and outdoor terrestrial radioactivity in different regions of the country (significance level $p < 0.05$). Furthermore, the influence of the factors linked to building characteristics in relation to indoor radon measurements in different regions was examined. The factors which enable a differentiation into subgroups (significance level $p < 0.05$) are the floor level, basement and building materials.

Key words – Indoor radon; Terrestrial radioactivity; Annual dose

42. NAVIKE U ISHRANI UČENIČKE I STUDENTSKE OMLADINE

42. NUTRITION HABITS OF PUPILS AND STUDENTS

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Introduction. Proper diet is a very important part of a healthy way of living and as such, it should be accepted at the earliest age.

The aim of this paper is to analyze characteristics in nutrition habits of pupils and students.

Methodology. A special questionnaire was used over the project “Health condition, health needs and health protection of population in Republic of Serbia“ in 2006. A section study on the specimen of 480 pupils and students from Kragujevac and Novi Pazar was performed in 2008. Proportions and grouping were used as statistical methods, and χ^2 - test was used for calculation of statistical significance of distinctions.

Results. Survey indicates that little more than a half of pupils and students have breakfast every day, 80% of them have lunch, and 50% of pupils and students have dinner. Fresh vegetables were taken on daily basis only by one third of pupils and students, and fresh fruit was consumed by little more than a third of them. As the most frequently used spreading in their nutrition, pupils and students eat margarine, mayonnaise, butter and kajmak (sort of dairy skimmed cream). Out of the total number of participants, 7,9% of pupils and students never think about their health when choosing a diet, 45,2% of them take it into consideration sometimes, 29% of them often do it, but only 16,3% of pupils and students always think of their health when choosing their nutrition.

Conclusion. Information about nutrition habits with pupils and students, are necessary to establish needs for sanitary and educational intervention directed to proper nutrition.

Key words: pupils, students, sex, nutrition habits, risk factors.

43. SOCIODEMOGRAPHIC CHARACTERISTICS OF VITAMIN AND/OR MINERAL SUPPLEMENT USE IN A GROUP OF OUTPATIENTS IN SKOPJE, R.MACEDONIA

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Background: There is an increasing trend of vitamins and/or minerals containing food supplements (VMS) use in many populations. Data on profile of typical consumer of these products in our settings is limited.

Aims: To gain information on prevalence of use and certain socio-demographic characteristics in a group of 1200 outpatients in Skopje.

Materials and methods: Data were collected with the method of interview using a specially designed questionnaire. Inclusion criteria were being a citizen of Skopje, and willingness and ability to participate in the research.

Results: Data from 1200 outpatients from Skopje were analysed, from which 510 (42.5%) reported using VMS over the past month. Female outpatients ($p < 0.001$) as well as participants from Macedonian ethnicity ($p < 0.001$), divorced outpatients ($p < 0.001$), those that had higher educational level ($p < 0.001$) and those being employed ($p < 0.001$) reported significantly higher consumption of VMS.

Conclusion: This research gave us an insight of VMS use in our settings and defined the profile of typical consumer of these products, which is a source of valuable information when planning public health activities.

Key words: vitamins, minerals, food supplements, socio-demographic characteristics, outpatients, Skopje

44. SOME ASPECTS FOR VITAMIN AND/OR MINERAL SUPPLEMENT USE IN A GROUP OF OUTPATIENTS IN SKOPJE, R.MACEDONIA

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Aims: To gain information on place of purchase, source of information, types of products used, reasons for use, and communication between doctors and patients on VMS use.

Materials and methods: Data were collected with the method of interview using a specially designed questionnaire for this study. Inclusion criteria were being a citizen of Skopje, and willingness and ability to participate in the research.

Results: Data from 1200 outpatients from Skopje were analysed, from which 510 (42.5%) reported using VMS over the past month.

Pharmacies followed by supermarkets were most common place of VMS purchase.

Physicians, magazines and television were most common source of information on VMS. Most commonly used products were multivitamin food supplements, followed by products containing vitamin C or B. Mostly used mineral products were those containing calcium or magnesium. Keeping the good health and prevention of diseases were most common reason for their use.

Only 58,04% of the interviewed users had disclosed the information on taking VMS to their physicians.

Conclusion: This research gave us information on different aspects of VMS use. The communication between doctors and their patients regarding VMS use should be promoted.

Key words: vitamins, minerals, food supplements, use, outpatients, Skopje

SESIJA SOCIJALNA MEDICINA SOCIAL MEDICINE SESSION

TEMA 1: PLANIRANJE I IMPLEMENTACIJA PROGRAMA ZA PROMOCIJU ZDRAVLJA

TOPIC 1: PLANNING AN IMPLEMENTATION OF THE HEALTH PROMOTION PROGRAM

UVODNO PREDAVANJE: INTODUCTORY PRESENTATIONS:

1. NATIONAL AND REGIONAL PREVENTIVE PROGRAMMES AND HEALTH PROMOTION PROGRAMMES IN SLOVENIA

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Introduction

The promotion of health and all levels of prevention in the field of public health have a long tradition in Slovenia. The promotion of health and the prevention of diseases are two processes which provide long-term results, yet require a lot of knowledge, expertise, co-ordination, integration and co-operation, tolerance, and support. In the last few decades, in Slovenia we have managed to develop, implement and disperse many professionally supported and proven programmes at a national, regional and local level. The programmes are based on the data of regular health statistics, periodic studies of the behavioural style of the inhabitants, and specific research.

Method

The programmes are aimed towards strengthening the health of the population, the prevention of diseases and the early discovery of risk factors, and the signs of disease which are considered one the greatest issues of public health. Programmes “Healthy cities”, “Healthy schools” and “Healthy kindergartens” are oriented towards the formation of health-friendly environments, and are carried out by individual towns, schools and kindergartens. At the state level, there are the ongoing systemically introduced programmes which are co-ordinated at several levels, as Health education for children and adolescents, the National programme for the primary prevention of cardiovascular diseases, the National programmes of screening and early discovery of colorectal cancer, and the National programme for the early discovery of precancerous changes to the cervix. We have transferred programmes from local and regional environments to the national level, namely the programme for the promotion of mental health of children and adolescents This is me, the programme for Healthy living which promotes the health of adults in rural environments, and the programme Safe with the sun, intended for children in kindergartens and schools.

Conclusion

We estimate, that with the implementation of the programmes for the promotion of health and prevention in Slovenia and the region of Celje, we have reached a large number of the population, improved the individual health indicators, reduced the burden of some diseases, built strong professional interdisciplinary and intersectoral networks, and increased the care of individuals for their own health. Given the rapid and dynamic demographic, social, economic, cultural, and other changes in modern society, and the simultaneous increase in inequality among people, and the limited possibilities of the health and social security system in the country, the need for promotion and prevention programmes will only strengthen. Therefore the area of public health is in desperate need more than ever for universal and diverse support which will provide for the preservation and strengthening of its role, and the ability to respond to the needs of the population in the area of preservation and strengthening of health.

Key words: health, prevention, promotion, disease, co-ordination

2. SOCIJALNO-ECONOMSKE DETERMINANTE ZDRAVLJA 2. SOCIO-ECONOMIC DETERMINANTS OF HEALTH

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Introduction

Approach that health simply means absence of disease has been already exceeded. Today is increasingly understood mutual correlation and crucial contribution of health to the entire process of development. Even in the early 20-ties of the last century Andria Stampar emphasized that health had much more economic than humanitarian significance indicating that without health economic prosperity is not possible (1). Social and economic circumstances and population health are permanently tied and mutually strongly depended.

Together with society development structure and frequency of health problems has been changed. Social and economical development which includes improved life standard, better education, much better and more available health care and introduction of contemporary medical achievements had positive influence to population health condition in many countries. Numerous infectious diseases have been controlled, some of them were completely eliminated and expected life time is prolonged. On the other hand society development has influenced changed life style of population and great participation of chronic noncommunicable diseases. However, there are still present great differences in population health between countries, as well as within countries. Nowadays there is general belief that inequalities in health are still present and sometimes they are even increased, not only in developing countries but in Europe as well. Life expectance at birth differs among countries and ranges from 34 years in Sierra Leone to 81.9 in Japan. In USA differences in life expectance are 20 years among different population society classes and 20% population is not included in any of health insurance forms (2,3). Economic crisis and limited funds for health care influenced increased inequalities in health even in countries with equalized availability. Increasing market orientation provokes difficulty due to neglected vulnerable groups. In former socialistic countries cause of increased inequalities are insufficient finances in insurance funds without inflow of money in undeveloped regions as well as private health insurance that is not available to people with low incomes (4).

Health of poor population categories is result of combined influence of unemployment, poverty, low education level, bad sanitary conditions, mulnutrition etc. Therefore, achievement of health includes equal significance of decreased mulnutrition, illiteracy, water contamination and unsanitary living conditions as well as availability of physicians, hospital beds and remedies. Dahlgren G. indicates that direct contribution of medical services is improvement of population health for around 10% while the rest of 90 % is result of other processes. Main health parameters are in correlation with living conditions, factors in surroundings, life style and biological factors like old age, gender and inherited factor. Factors like accommodation, quality of nutrition, education, living conditions, transportation conditions, tax obligations and public welfare policy very often more effectively influence population health than health sector itself (5).

Socio-economic determinants of health – „Syndrome of status“

Socio-economic determinants of health represent social and economic conditions in which people are born, grow, live, work and grow old, and which have the influence on health. They are the essential causes of inequality in health among individuals within a country, differences among population groups, countries, as well as a change in health status over time. One of currently most eminent scientists in this field, Michael Marmot, called significantly worse health of individuals which is the consequence of socio-economic conditions „Syndrome of status“ (6.).

Different positions of people in a social hierarchy result from their professions, level of education and material status. Their position in the system of social stratification can be summarized as their socio-economic status. Although the term „socio-economic“ was introduced by the American sociologist Lester Word long ago in 1883, there has not existed yet the consensus on nominal definition of socio-economic status. While the number of researches that connect health with socio-economic status is constantly increasing, relatively little attention is paid to conceptualization and the method of measuring of the very socio-economic status and the researches are rare and full of theoretical and methodological problems, all of which aggravates the comparison among countries (2,7). According to Kunst A. E. and Machenbach J. P, socio-economic status is measured on the basis of the three indicators: profession, level of education and material status, and in the widest sense of the word it denotes a position in a social hierarchy (8).

A strong bond between socio-economic status and health was documented through centuries way back in ancient Greece, Egypt and China. As early as 1842 in Great Britain Edwin Chadwick in his *Chadwick Report* pointed to a particular importance of socio-economic determinants to the health of people (9). Antonovski analyzed the literature from 17th century to early 60s of the last century about the relationship of socio-economic status and mortality, including over 30 studies mostly from European countries and USA. There, the socio-economic status is measured in different ways, including profession, mean renting price, tax status and indices that represent education, profession and mean family income. Antonovski concluded: „Despite the numerosity of methods and indices applied in around 30 quoted studies, as well as the variety of the analyzed population, an inevitable conclusion is that socio-economic class influences the chances of an individual to stay alive“(10). *Black's Report*, published in Great Britain in 1980, says that the belonging to a social class is important for health and mortality of certain illnesses (11). *Acheson Report* from 1998 confirmed earlier statements that in Great Britain there are inequalities in health, as well as the fact that poverty represents a significant socio-economic determinant of health (12).

Special contribution to the development of socio-economic approach in our environment was given by Milan Jovanović Batut who particularly emphasized the influence of education to health.

There are many different concepts that speak about the items that are included in socio-economic determinants of health. According to Wilkinson and Marmot, socio-economic determinants of health include the following: social differences, stress, early period of life, social exclusion, profession, unemployment, social support, addiction (to alcohol, tobacco and drugs), food and transport (13). Raphael holds the opinion that socio-economic determinants of health are the following: education, income, social status, employment, working conditions and safety at work, unemployment, housing, health care services, social support, social exclusion, early period of life and food supply (14).

Numerous analyses showed that persons of lower socio-economic status have shorter life expectancy and higher rates of morbidity and mortality. Low income, unemployment and lack of education influence their life habits and restrict their choice of a living style, as well as accessibility and utilization of health services (7).

International recommendations directed to socio-economic determinants of health

As an answer to rapid global changes and continuing of its policy „*Health for All by the year 2000*“, in 1998 World Health Organization adopted the document „*Health for All – Policy for the 21st Century*“, which formulated 10 general goals that should be realized by 2020 (12, 13). This document was elaborated as an attempt to answer numerous global changes like demographic and epidemiologic transition, poverty and increase of inequality, urbanization, environmental changes, etc. The differences in health are the most significant in territories where the economic power of the community is insufficient to provide an adequate income for everyone, and where social systems are in crisis and resources used in inadequate manner (15,16).

In 1998 Regional Committee of WHO for Europe formulated political frame „*Health 21: the health for all policy framework for the WHO European Region*“ with 21 goals for the 21st century, which should be realized until 2015. The strategy comprises major health problems, goals and measures for their realization and a list of suggested indicators for follow-up of progress in their realization. Regional Office for Europe in its goals 1. „*Solidarity for health in the European Region*“ and 2. „*Equity in health*“ emphasizes that difference in health among member countries should be decreased by 30% until 2020, and within countries reduced at least by 1 quarter of all the countries by significant improvement of health level of the most endangered categories of population (14). It is particularly emphasized the necessity of decreased risk in life expectancy, morbidity parameter values, incapacity and mortality, then in income, education and employment, as well as in decreased the share of population living in poverty. Persons with special needs as consequences of their health status or socio-economic circumstances should be protected by social exclusion and provided with easier approach to an adequate health care (15).

In 2000 our country, along with other 189 parties countries, adopted in New York *Millennium Declaration* (16). There are adopted millennium developmental goals which should be achieved by 2015, among which the first two re-emphasized goals are the need for poverty and hunger decrease, as well as reaching of universal elementary education. A step forward in striving for health improvement and poverty decrease is presented in *Social Inclusion Process* established in 2000 at *Lisbon Summit* of European Council. Countries in EU accession process are obliged to elaborate *Joint Inclusion Memorandum* within which each of the countries describes the context of poverty and social exclusion, as well as priorities in solving of those problems. The longer people live in unfavourable conditions, the greater is the probability that they would be faced with a spectrum of health problems. Exclusion from social life and less equal treatment can lead to worsening of health and higher risks of early death (17).

Answering to the increased of concern due to spreading of health inequality, in 2005 WHO formed *Commission on Social Determinants of Health – CSDH* with the aim to counsel and support countries in mutual partnership on decreasing of inequality in health conditioned by social factors. Main recommendations by the Commission report are related to improvement of living conditions, decrease of unjustified distribution of power, money and other resources at global, national and local level by redistribution of resources according to the needs of people (18).

Socio-economic inequalities in health in the Republic of Serbia

In accordance with the recommendations of UN and WHO, besides Health policy of Serbia, the government of the Republic of Serbia enforced a series of important laws, strategies and documents among which are also the Strategy on poverty decrease and Millennium developmental goals in the Republic of Serbia by 2015, which make a unity. *Strategy on poverty decrease* defines major strategic courses of social development and poverty decrease in the years to come, and establishes endangered groups as follows: *illiterate and uneducated persons, unemployed persons, elderly people, multi-member households, rural population, refugees and internally displaced persons, Roma, persons with disabilities and women* (19).

The Study of living standard from 2007 showed major characteristics of poverty in Serbia: it is more dominant in rural areas of south-eastern, western and central Serbia, where regional differences are the greatest in Europe. The poorest households are those in which their holder is unemployed and with lower level of education. Elderly people over 65, children up to 14, families with greater number of small children (0-6 years) and households with greater number of family members (six and more) are more exposed to the risk of poverty, as well as persons with disabilities, while there is slightly less risk of poverty for refugees and internally displaced persons in relation to 2002 when the questionnaire was written for the first time (20).

Life expectancy at birth in Serbia in 2010 is 74,4 years (71.8 for males and 77.0 for females) and still significantly less behind the mean in European Union which is 79.9 years (76.9 for males and 82.9 for females) (21). Population structure of Serbia according to level of education also shows very unfavourable state: 16.3% is with unfinished elementary school or even less than that; 19.5% is with elementary school, and 50.1% of population is with secondary school. Higher or university education is present in 14.2% of population (22).

According to employment indicators, Serbia is at the bottom of European scale. Unemployment rate in 2011 (23.6%) is among the highest in the European Union (EU mean is 9.6%, ranging from 3.2% in Norway, 4.1% Austrija, 4.4% Netherlands to 21.9% in Spain). Long-term character, dominant participation of the young and women, population with secondary level education, Roma, refugees displaced persons and persons with disabilities had twice as much higher unemployment rates (19).

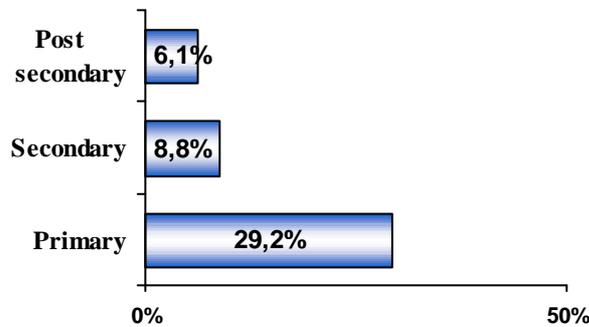
In our country routine health statistics does not provide data on morbidity according to socio-economic status. At the republic level these data dating back in 2000 are followed by Ministry of Health and World Bank via Institute of Public Health of Serbia in researches on the health of the population of Serbia, as well as the Republic Fond for Statistics via Study of living standard. Research of health of the population in Serbia from 2006 pointed to a strong connection between socio-economic status and health. Poor and lower educated inhabitants of Serbia significantly prevail: they assess their health status as bad, suffer from chronic diseases, are less satisfied with their lives, are without social support, have long-term negative mental status and feelings. In Serbia there are distinct socio-economic inequalities in utilization of primary health care (22).

In Serbia, 15.7% of the adult population assessed their health as bad. The number of persons who assess their health as bad among educated categories in Serbia ranges from 6.1% in postsecondary level (higher/university education) to 29.2% in persons with primary education (elementary school or less than that) and from 7.1% in the richest persons to 27.1% in the poorest ones. There are also differences among regions of Serbia, where the population living in south-eastern and eastern Serbia assess their health status as bad (20.1%, i.e. 19.3%, respectively) (Graphs 1, 2) (22).

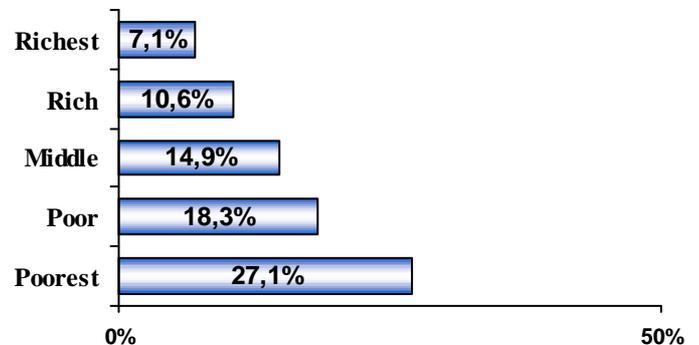
Graph 1 Adult population of Serbia that assess their health status as bad according to education level

Graph 2 Adult population of Serbia that assess their health status as bad according to DHS Wealth Index

Graph 1



Graph 2



The poorest and lower educated population in Serbia have significantly higher total prevalence of chronic illnesses. The share of the population with no restrictions in everyday living activities increases with the level of socio-economic status. The highest percentage of elderly population (persons older than 65) that have no physical and sensory restrictions is among persons with higher educational and material status (22).

Life satisfaction also increases with the increase of educational level and material status (24). In Serbia, 6.8% of adult population have no person to count on in every situation, which is the case significantly more present in the poorest (12.3%) and lowest educated (9.3%) population. The data of the research also showed the connection of mental disorders with socio-economic status. Exposure to stressful situations and presence of emotional problems is more frequent in population of higher socio-economic status, however, long-term negative mental status and feelings are more present in population of lower socio-economic status (22).

Obesity in Serbia is more present among persons of lower level of education, as well as in persons of average material status. The least obese persons are those with university education and the richest ones. At the level of Serbia, undernourished (2.3%) persons are mostly women, population with lower and secondary education, as well as the poorest ones (24). The prevalence of hypertension in Serbia is 46.5%, where it is mostly present in those with lowest educational level (62.7%) and the poorest ones (53.1%) (22).

When speaking of utilization of primary health care, every second inhabitant (50.6%) has his general practitioner or environmental medicine specialist. The poorest and lower educated persons are in significantly less percentage: they have their general practitioner, visit their chosen doctor, use dental services, while the most numerous among them are those who never visited any doctor. The basic reason of low usage of health services is due to financial nature.

Conclusion

In health policy there still dominate solutions focused to illness by which socio-economic determinants of health are significantly neglected. As a result of that, health problems are still present, as well as the inequalities in health and usage of health care.

Synchronized acting of all the relevant sectors (education, social and health care, work and employment, economy, etc) is necessary concerning the improvement of health of socially endangered categories of inhabitants, as well as political structures. Further realization of the aims of Health Policy in Serbia and multi-sector strategies should contribute to the decrease

of poverty, unemployment, improvement of education, more accessible and quality health care, as well as social protection of highly endangered groups.

in successful realization of goals, beside financial support, it is also necessary to conduct some reform changes in all sectors, but also the readiness of all the participants starting from the government to the level of community and individuals to participate responsibly in conducting the anticipated measures and activities. Finally, further necessary financial help to the country and general conditions for its integration to EU are completely conditioned by the realization of the mentioned goals and strategies.

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3. TIMSKI RAD U MENADŽMENTU 3. TEAMWORK IN MANAGEMENT

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Today, an increasing number of problems can be successfully solved only through teamwork. The accumulation of different problems and requires constant change environment dictate the need for rapid response, and it can only provide quality communication and teamwork.

A team is a group of individuals who share a common goal, and within a group, tasks are distributed according to individual skills. Working together has many benefits: new friends, a sense of community and distribution of responsibilities. In contrast, teamwork can lead to: tension and anxiety (due to miscommunication).

Formal teams arise from hierarchical (formal) organization scheme, leaders are elected or appointed. It is permanent or temporary, depending on the specific tasks that they perform.

Informal teams arise from the need of people to socialize and cooperate, leaders stand out gradually during the interaction of team members. It is usually made up of people of similar rank who work in the same office or department

I Group and Team

Each team is a group, but each group is not team.

Group is a group of people who are interlinked by common goals and interests, and among them there is a common interaction.

Team is a group whose duties are complementary to one another, and the whole group performs an important function for the organization.

Working in a team involves: support, cooperation, mutual trust, effective leadership, open communication, agreed ways of evaluating the performance. Team members have the same goal, there is a common identity and team members share common values. Working in a team gives a sense of satisfaction, status and security. In team, collective consciousness is stronger than the individual one ("we" before "me") and synergy effect is manifested.

Group can become a team when:

all members are working towards a single, common purpose;

all participate in decision-making;

there is an atmosphere of cooperation, understanding and mutual encouragement;

there is open communication, trust and respect;

acceptance of diversity and tolerance are the principles of action;

everyone knows his role and he is satisfied (in accordance with his / her abilities and preferences);

there is a sense of "ownership" of their own work with each individual in the group.

Key differences between the group and the team can present the following table:

	GROUP	TEAM
GOAL	Individual	Common
RESPONSIBILITY	Individual	Individual and common
SKILLS, ABILITIES	Random and different	Complementary
SYNERGY	Neutral (negative)	Positive

II Stages in the team development

Any group that wants to become a team has to go through different stages in their development - Formation Leavening, Norming, Action i Transformation:

Formation (creation)

At this stage, the group gathers. There are no differences in opinions, attitudes and ideas. Members do not know each other well enough, all are highly motivated and full of expectations. Here is little mutual trust, people pay attention to what they say.

2. Leavening

There is the first appearance of conflict and splitting emerge, differences of opinion, features and boundaries are being tested. There are first conflicts over leadership, members lose their initial impulse, motivation decreases and people do not want to accept a compromise at the cost of their individual interests. Good communication is crucial so that team does not desintegrate.

3. Norming

At this stage group gets the team features. Team members put the interests of the team before their own, accept differences, realize that cooperation involves giving and taking. Members learn how to work together in the best way and set rules (norms) of behavior within the team.

4. Action

There is a clear sense of purpose and great confidence is built. Team can work effectively and toward a common goal. Team may fall into a crisis because the conditions change or the rules are not set up well enough and naturally returns to the stage of standardization

5. Transformation

This phase represents the culmination and end. After fulfilling the goal team restructures or decays. This phase is often called split phase.

III Determinants of a successful team

The common goal / vision

All team members share a common goal (sense of purpose motivates them to work together). Goal must be clearly defined and understood (setting priorities and directing the team in the right direction).

If all team members do not see clearly the common goal : commitments are not taken seriously, deadlines are breaking through, there is disagreement over what team should do, lack of coordination, motivation decreases and team falls into crisis.

Trust, good relationships and mutual respect

Responsibility is divided, path to continuous improvement is required, team members learn on the experiences, requires the effort of the whole team.

If these relationships are not built: team members do not share important information with each other, they talk behind each others back even things they dont really think, working together becomes a source of frustration and stress, team is not effective, goals are not achieved.

Open and bidirectional communication

Ideas, opinions and feelings are expressed openly and without hidden objectives, all team members are introduced with all the relevant information, there is no fear of causing conflicts, misunderstandings and conflicts are solved quickly and constructively.

If there is no open and bidirectional communication : people do not understand each other well, they do not listen to each other, there is no a good flow of information for the effective execution of tasks, the team is behind the schedule in making and announcing decisions, team work is disorganized, no paying attention to the ideas of individual members, team work is slowed down, individuals get frustrated and lose confidence.

A clear distribution of roles and responsibilities

Each team member knows his/her role, duties and responsibilities, each team member is satisfied because the role suits his abilities and preferences, work is effective and there is no duplication. There is no formal leader of the team, but he acts as a mentor, helping members to make the best use of their skills and capacities, develops the pleasant working atmosphere where creativity and innovation is valued

An unclear distribution of roles makes: frustration, stressful situations and failure to task, competition over taking attractive requests, important tasks are not executed, time is lost on unimportant tasks, already done is often done again.

Acceptance of differences :

Different skills, knowledge, abilities, values and experience of each member of the team greatly strengthens the team and improves its success, conflicts are solved effectively and problems are viewed from different angles and effective and creative solutions are found. People learn from each other, ideas are evaluated regardless of where they come from, and members have the opportunity to show their best in matters they are good at and which correspond to their preferences .

If you do not respect differences: team members have roles that do not correspond to their abilities and / or personal priorities, team does not use the maximum that members can provide, there is a distinction between "popular" and "less popular" team members and lack of respect and appreciation. People are disappointed, they feel bad when working together and tasks are performed slowly and inefficiently .

Balancing the demands and relationships in a team :

It is necessary to balance between the execution of tasks and maintaining good interpersonal relationships .

Excessive concentration on good relationships between team members causes: neglect of duties, decreasing quality, failure to fulfill team purposes. Decisions made together are not executed, motivation decreases and occurs disintegration of the team.

IV Team members

In order to form a successful team, should start with the profile of knowledge required to successfully complete a task, the required skills profile and personality. Team members understand the common goals and believe in them. They participate in team planning, decision making, working. They work independently and cooperate with others, present ideas, suggestions, initiatives. Team members communicate actively, openly, honestly and constructively. Constantly learning, applying new skills, improving him/herself .They Use their own knowledge, skills and talents.

Team leader is seen as a collaborator and coach. He is active in the evaluation of performance and problem-solving.

V Barriers in the team work

Barriers in the team work are:

Unclearly defined role on the team

Too many or too few members of the team

Individuals do not strive to the same goals

The goals are not clearly defined and measurable

Insufficient number of persons with the necessary knowledge and skills

Lack of clear and rapid changes in information

VI The benefits of teamwork:

In teamwork tasks are divided into smaller pieces and that facilitates work and better results are achieved. There's a sense of belonging, which stimulates the members to give their best, to be creative and freely express ideas. Fun is always an indispensable element of any action, and teamwork has a positive effect on self-esteem.

The team results exceed individual results. Complex problems and conflicts can be resolved properly and creative ideas are encouraged by the other team members. A team inspires knowledge and collective power, support increases among team members and communication improves.

Teams promote continuous learning and improvement, promote self-discovery and revision, and improve the quality of decisions and the pleasure of working.

VII Team communication

It is necessary to discuss and to maintain the good atmosphere and team. Jokes and humor stimulate the connection in team. Everyone should be listened to - ignoring is prohibited. The threats in of the team are inappropriate. That spoils a good atmosphere and casualness. The threat is always personal, and people are willing to fiercely defend their personal integrity. Only constructive criticism is allowed.

People can learn from mistakes and we have to give them a second chance. Colleague should carefully point out to the errors occurred and to the ways to correct them. Punishing the team is not appropriate. Losing the sense of guilt is difficult, people are isolated. People do not give their best in fear of repeating the mistakes and being punished again. Unresolved issues can destroy team.

The duty of the leader is to recognize these problems, track down the cause, present a problem to everyone in the team. The problem should be solved together.

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USMENA IZLAGANJA:
ORAL PRESENTATIONS:

1. PROGRAMI ZA PLANIRANJE PORODICE U SVETU I SRBIJI
1. FAMILY PLANNING PROGRAMS IN THE WORLD AND SERBIA

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Aim of the study: overview of various programs which promotes family planning in the world and our country.

Method of the study: For reviewing the program for the promotion of family planning are used the results of surveys done in the world and our country.

Results: The promotion of family planning is carried out in various ways in the world:

The implementation of family planning services

CBD (Community-based distribution)

Through the radio soap opera, radio drama, etc., information about the usage of certain contraceptives are sent to the user. CSM program uses commercial marketing techniques for promoting use of modern contraceptives. In some countries, programs addressed to young people are implemented in the framework of strategies to prevent and combat HIV/AIDS and STIs.

To introduce Youth-Friendly Services throughout the country

Implementation of sexuality education as a statutory part of school health education

Youth education about reproductive health is carried out most frequently through media (TV, Internet) and mobile phones.

There are not any national programs in our country for family planning and preservation of reproductive health in youth population. Information about family planning was brought in 1998. and it was supposed to partly solve this problem, but it never came to realization. Health centers in our country include services for family planning. Unfortunately, less than 5% of women visit these services.

Except youth counseling, which exist in some health centers, recently were opened web sites where youth can get basic information about reproductive health.

Conclusion: Programs for the promotion of family planning is conducted in many countries in the world. It is essential that the national family planning program exists in our country. The program will help to protect the reproductive health of young people and will cause an increase in fertility rates.

Keywords: promotion, family planning, programs.

2. ZDRAVSTVENA PISMENOST- SAVREMENI POSTULAT ZDRAVSTVENOG VASPITANJA I PROMOCIJE ZDRAVLJA 2. HEALTH LITERACY- MODERN POSTULATE OF HEALTH EDUCATION AND HEALTH PROMOTION

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Introduction: Although health education and knowledge are considered as a prerequisite for the adoption of positive attitudes and behaviors related to health, the practice shows that this relationship is not always direct, positive and linear. In an effort to elucidate the essence of this complex relationship a concept of health literacy has emerged, as a field of practical work in the area of health promotion.

Aim: To indicate the extent and severity of the problem of health illiteracy and to emphasize the necessity to bridge the gap between the conceptual definition of health literacy and its practical application.

Methods: Descriptive analytical approach

Results: This work summarizes the most important elements of the concept of health literacy, highlighting its strategic challenges. It provides an overview of the results of global researches, proving the existence of "silent epidemic" of health illiteracy in the world. It shows the most frequently used instruments for measuring health literacy and emphasizes the specificity in communication with low health literacy persons.

Conclusion: The purpose of the contemporary concept of health literacy is to improve health outcomes and reduce disparities in health area through an improved system of health communication and programs of health education.

Index of health literacy could become a significant measurement of the results of health promotion and prevention activities, as well as a marker of health competence and capacity of the citizens.

Keywords: health literacy, health equality, health education, empowerment, health promotion.

3. STANJE I PREVENCIJA NASILJA KOD ADOLESCENATA U NIŠU 3. STATE AND PREVENTION OF VIOLENCE IN ADOLESCENTS IN NIS

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The aim of the paper is recognition and prevention of violence in adolescents i.e. scholars in elementary and middle schools in Nis. In Nis, in five municipalities live more than 30.000 adolescents, who are the target group for Council for young people of the Dom zdravlja Nis. Unique and anonymous epidemiological questionnaire interviewed attitudes and habits and knowledge level related to numerous risk factors for young people in 3.500 elementary and middle school scholars. The paper presents results related to rate of violence in adolescents. Obtained results: 53%-57.8% in elementary schools reported fights between scholars and 27,2%-38,3% middle scholars. Quarrels are present in 54,2%-66,6% in elementary but 68,2%-77,5 in middle schools. Conflicts are repeated often 9,5%-20,3% in elementary schools and 10,4%-25,4% in middle schools; repeated conflicts with same scholars from 46,6%-51,8% in elementary and 40%-42,2% in middle schools. Personal involvement in physical conflicts from 31%-33.5% was present in all interviewees. Statistically significant correlation was found between scholars who consumed alcohol and their involvement in conflicts. It can be concluded that one third of adolescents have personal experience in physical conflicts disregarding age and type of school, conflicts are repeated in 20%-25% of cases and from 40%-52% the same scholars participate in conflicts. It is necessary to unite all resources in the fight against violent behavior. Promotion of nonviolent behavior and peaceful conflict resolution in adolescents should be simultaneously supported by media, educational system, public health care system, including family education. As penalty measure community service should be involved.

Keywords: adolescents, violence, health-educational program, nonviolent behaviour

4. BORBA PROTIV DROGE, PRIMER LOKALNE ZAJEDNICE 4. FIGHT AGAINST DRUGS, COMMUNITY SAMPLE

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Faced with a difficult problem of drug use among young people (one registered drug addicts in 1000), communities of West Backa County (seat in Sombor) in May 2009. organized public health action-day-long education on "Prevention of drug abuse in the community". The aim of the seminar was an initiation society actors to launch the campaign, the development of knowledge and skills of local community leaders to work in this area as well as training activities for the development of the holders of primary and secondary prevention of drug. It included over 15 target groups: health, education workers, psychologists, sociologists, police, journalists, religious workers, local leaders, parents, students, NGOs, military, volunteers, over 200 participants. After the seminar, the campaign was conducted among fifth graders in 41 elementary schools in the district and is repeated every year to date. Includes more than 1000 students annually. Coordinators use the uniform method within four workshops during the school year in which the participating students and their parents. In the district there are three generations of educated who knows how to say NO to unhealthy challenges of modern life. This generation will soon, as high school students, take peer education. The program has spawned individual projects that contributed to the transfer of knowledge and contribute to other age groups as well as the adult population.

Key words: young people, drug, local community, education

TEMA 2: MENADŽMENT U ZDRAVSTVU TOPIC 2: MANAGEMENT IN HEALTH CARE

USMENA IZLAGANJA: ORAL PRESENTATION:

5. MEDICINSKA DOKUMENTACIJA – SUDSKO-MEDICINSKI ASPEKT 5. MEDICAL DOCUMENTATION - FORENSIC MEDICAL ASPECTS

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Medical documentation contains data that are a medical secret, but it is also a public document. Contain the information necessary for the health and healthcare management and have forensic medical significance. In case of dispute, the quality management of medical documentation is the only evidence about provided medical care. In accordance with the Law on Health Care, a patient has The Right to information and the Right to be Informed. Raising the patient's knowledge about their rights, we have more frequent litigation. Despite the quality of health care, incomplete, or not certified medical documentation can be forensic medical problem to doctor who wrote it.

The aims of this study were to analyze the management of the basic medical documentation, medical certification of documents and conducting training on this issue. Results and discussion: within the 7 days, there were examined hospital files of all patients discharged from the hospital, the 146th in total. All dismissal letters were written and signed in accordance with the Law (100%). However, history and decursus are not certified by signature and initials: somewhere there was only a facsimile or printed name of the physician, no initials somewhere there was only initials without facsimile. Fully certified was 60%. Decursus was not written every day. Death certificate was located in the center of Pathology. All files had the Statements of acceptance of to medical intervention, but did not have the Statements of acceptance to medical treatment. Six months after the lecture the CME, we performed a re-analysis of the quality management medical documentation. The content of a medical file is complete, and the certification of medical documents over 90%. Conclusion: full and well-managed medical documentation is the basis for the protection of patients' rights but also for the protection of professional health activities of every medical worker. Medical Education relating to writing and validation medical documentation is an essential component of health care quality and management.

Keywords: medical documentation, document validation, healthcare management

6. POKAZATELJI KVALITETA ZDRAVSTVENE ZAŠTITE

6. INDICATORS OF QUALITY OF HEALTHCARE

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The first decades of the 21st century was a period of great change in the state health care systems around the world. Introduces significant changes in organizational structures and develop a new strategy. Their implementation as a final result we obtain a significant improvement in the quality of health care. Monitoring the quality of health care is a major challenge, even for countries with highly developed health systems.

In most countries of the European Union in the last two decades, access to permanent and organized management of quality health care from institutions, organizations and private companies involved in improving health care.

Despite the great efforts in this regard, it is evident that the global trend and the constant demands of the individual and society for better quality - up to excellence, yet unfulfilled.

The results of the research even in the most advanced health care systems (the United States, Canada, Japan, EU countries) show a growing percentage of dead or damaged due to inadequate diagnostic or therapeutic procedures.

Patient satisfaction, quality service and efficient management of resources become the "Holy Trinity" of modern health care that is strictly oriented towards the patient. Cost reduction is a given.

TEMA 3: SOCIJALNO-MEDICINSKI ASPEKTI ZDRAVLJA
TOPIC 3: SOCIO-MEDICAL ASPECTS OF HEALTH

USMENA IZLAGANJA:
ORAL PRESENTATION:

7. SOCIO-DEMOGRAFSKI FAKTORI I ASPEKTI PONAŠANJA U VEZI ZDRAVLJA
7. SOCIO-DEMOGRAPHIC FACTORS AND ASPECTS OF HEALTH BEHAVIOUR

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Aim: To identify predictors of non-attendance in a cervical cancer screening program.

Method: Cross-sectional study on the territory of Kruševac, in May 2012., on the basis of telephone interviews with 212 non-attendees and 294 attendees identified in a cervical cancer screening program.

Results: Being single or being non-employed are not the only important socio-demographic predictors of non-attendance. Non-attendance is more likely among women who never visited a dentist, had not visited a doctor in 5 years, had never used oral contraceptives, had never had cervical smear tests, and reported no cancer in family or friends.

Conclusion: Socio-demographic factors alone do not appear to constitute strong predictors of non-attendance. General health behavior and previous experience of cancer seem to be more important factors. Our results suggest that in the setting of population-based outreach screening programs, previous contacts with the health care system, trust in health professionals and encouragement from health professionals represent determinants of attendance.

Key words: socio-demographic aspects of health, behavior

8. STILOVI ŽIVOTA I ZDRAVSTVENI PROBLEMI STUDENATA UNIVERZITETA U SRBIJI

8. STYLES OF LIFE AND HEALTH PROBLEMS OF UNIVERSITY STUDENTS IN SERBIA

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Objective: The aim of this study was to examine the habits and lifestyles of students in Serbia, as well as links to their most common health problems.

Materials and methods: The cross-sectional study was carried out at the three State Universities from January to June in the academic year 2009/2010. and included 2285 students of both sexes. The students filled in a questionnaire consisting of 35 questions referring to demographic and socio-economic characteristics, life-style habits, attitudes, health assessment, as well as some health problems. Subjects were divided into groups by sex, group faculty and residence.

Results: Even 15.1% of men and 9.2% of girls never think about their health when choosing food. Men are more physically active than girls ($p < 0.001$). Girls were more likely to change their behavior because of a better quality of life ($p < 0.001$). Girls had more pain in one part of the body, were depressed more often than men and were more stressed. Also, they are easily tired, they were more anxious and had more problems with sleep ($p < 0.01$). Students of natural science faculties eat the healthiest, but sleep at least and go to bed earliest working day and most are physically active. Students who live in the dorm have higher average grades, and students who live with their parents sleep longer ($p < 0.01$). Students who have their own apartment are less physically active and go to bed later at night ($p < 0.05$).

Conclusion: Students must be encouraged to become actively involved in health promotion (HEALTH FOR ALL!), not only as objects for professional treatment, but as a competent and dedicated promoters of healthy lifestyles in their families, neighborhoods, schools, colleges and work places.

Keywords: Students, Styles, Health

9. MORTINATALITET NA PODRUČJU NIŠAVSKOG I TOPLIČKOG OKRUGA U PERIODU 2006.-2011.

9. STILLBIRTH CHILDREN IN NISAVA AND TOPLICA DISTRICT DURING 2006.-2011.

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WHO Definition: The definition recommended by WHO for international comparison is a baby born with no signs of life at or after 28 weeks' gestation

The causes of a 30% of human stillbirths remain unknown. In cases where the cause is known it is birth complications, maternal various diseases, disorders of fetal growth, congenital abnormality, chromosomal aberrations, growth retardation

Prevalence: The report of the World Health Organization (WHO) states that worldwide in 2009. year, there were about 2.6 million babies stillborn, 98 percent in poor and developing countries.. A Half of all babies stillborn, or 1.2 million, happened during the delivery, Two-thirds of the deaths occur in rural areas where medical staff do not come in time for the start of deliveries

Prevention: WHO suggests that 1.1 million stillborn babies could be prevented with prompt medical care during pregnancy and childbirth, Experts estimate that one out of three cases of stillbirth associated with factors that are can be prevented

The strategy for 2020: 1.For countries with a current stillbirth rate of more than 5 per 1000 births, the goal by 2020 is to reduce their stillbirth rates by at least 50% from the 2008 rates. 2.For countries with a current stillbirth rate of less than 5per 1000 births, the goal by 2020 is to eliminate all preventable stillbirths and close equity gaps. 3.More than 40 high-income countries and several middle-income countries have already achieved a stillbirth rate of less than 5 per births, eg. 1000

Results: In the area of Nis and Toplica District in the period 2006-2011.g stillbirths recorded a total of 144 (76 male and 68 female) from 26 031 births (rate of 5.3 per 1000). The average body weight of the children was 2203.82 ± 900.17 grams, the average length of 45.18 ± 6.17 cm and average gestational weeks 34.92 ± 3.76 . The structure of the gestational age: 61.1% of children premature (28-36 weeks), 35.4% of children term (37-40 weeks) and 3.5% post-term children. Abnormalities were present in 18 (12.5%) of these children and to significantly higher in the girls 13 vs. 5 ($\chi^2 = 5.32$ $p = 0.021$ $p < 0.05$). Stillborn babies were 133 (92.4%) of singleton pregnancy, 5 (3.47%) a stillborn twins, and 6 (4.17%) twins both stillborn.

The average age of the mother ± 28.19 years 6:29, 79 primiparous women (55%), with no previous abortion 115 (80%), with no Dg in pregnancy 117 (81.25%), without Dg in confinements 141 (97.92%). In 103 (71.53%) was Partus spontaneus simplex (Ø80) in 15 (10.42%) is Partus simplex Section Caesarea (O82), 11 (7.64%), multiple pregnancy (O84), and the remaining 15 (10.42%) were assisted delivery (O81 and O83). stillbirth rate is twice the Roms (Serbs 4.9 / Roms 9.69). Roms make up 8.32% of born children but 16.4% of the stilborn children.

Conclusion: The rate of mortality in Serbia and Nisava and Toplica district from about 5 to 1000 is not satisfactory, reducing the need 2.Work to reduce rates in certain social / ethnic groups 3.Minimized all preventable cases of stillbirths 4.Improve records to reduce the proportion of "no apparent reason"

Keywords: stillbirth

10. ZNAČAJ PSIHOSOCIJALNIH FAKTORA U PREVENCIJI
GLAVOBOLJA TENZIONOG TIPA KOD ADOLESCENATA
**10. IMPORTANCE OF PSYCHOSOCIAL FACTORS IN PREVENTION
OF TENSION TYPE HEADACHES IN ADOLESCENTS**

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Introduction: Tension-type headaches are characterized by mild, non-pulsating, bilateral occipital pain, pressure type that lasts from several minutes to several days, not followed by vomiting, and they constitute 27-40% of all headaches in childhood.

Aim: Determine whether there are socio-emotional factors that may be associated with the appearance of tension-type headache in adolescence.

Patients and methods: Prospective analysis included 112 adolescent patients who were treated at the Department of Child Neurology during 2010 and 2011 with the diagnosis - Tension type headache G44.2. Criteria of the International Classification of Headache Disorders from 2004 (ICHD-2) were used for the diagnosis. Data on psychosocial factors were obtained by completing a questionnaire based on self-assessment of respondents.

Results: The difficulties related to the school environment were confirmed by 63 (65%) adolescents, difficulties in family environment were in 38 (39%), 36 (37%) adolescents showed the problems with peer relationships, and 21 (21,6%) had dissatisfied personal competence. 79(81,4%) of adolescents considered that insufficient sleep, and the irregular meals declare the 73 (75,2%).

Conclusion: Psychosocial factors which predisposing the occurrence of tension type headache were present in more than 3/4 subjects. Modification of lifestyle is the main way for the prevention of repeated episodes of tension type headache. Analysis of psychosocial factors provides recommendations for the prevention of tension headache attacks.

Key words: tension type headache, psychosocial factors, adolescence

11. ZNAČAJ STEPENA OBRAZOVANJA STARIH LICA ZA PONAŠANJE U ODNOSU NA ZDRAVLJE

11. IMPORTANCE OF THE EDUCATION LEVEL OF THE ELDERLY IN RELATION TO THEIR BEHAVIOR TOWARDS HEALTH

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Behavior towards one's health is conditioned by numerous factors: acquired level of knowledge during one's life, socio-economic conditions, tradition, culture, awareness level etc. One of the significant conditions of behavior towards one's health is related to the acquired knowledge of the factors significant for maintaining and promoting health, as well as risk factors that may jeopardize it. In terms of the elderly, who are mostly greatly motivated when it comes to caring about their health, unlike the younger population, the acquired knowledge of the factors related to one's health during one's life should be considered as a significant fact of prevention (not only primary, but also secondary and tertiary).

The aim of this paper is to examine the extent to which the education level of the elderly population is a significant factor of their attitudes towards health and the behavior in relation to their health.

The methodology involved a survey conducted on the representative sample of people older than 65 from the area of the city of Nis (a total of 1295, out of whom 579 men and 716 women). Structural parameters and tests of statistical significance were used in the statistical processing of the obtained data.

Research results: the structure of the elderly respondents, considering their education level, does not significantly deviate from the educational composition of the elderly in the Republic of Serbia: 39.5% have a high school education, 27.6% have elementary school education, 14.9% did not complete elementary school, and 12.9% have an associate degree or university degree, while 5.1% have no education. The respondents have displayed significant familiarity with the number of health risk factors in relation to their education level, comparing its lowest and highest level (no education and associate or university degrees): $\chi^2=9.18 > \chi^2(2 \text{ and } 0.05)=3.841$; $p < 0.05$. In relation to the responses related to recognizing the most significant health factors, out of 7 options, both sexes are most significantly ranked in the ones relating to regular health examinations, physical and mental activity, as well as moderation in all walks of life, with statistically significant differences in the structure of given responses when compared to education: $\chi^2=177.4 > \chi^2(15 \text{ and } 0.05)=24.996$; $p < 0.05$. Concerning regular examinations, the education level of the elderly has a statistically significant role: while those with lower education most frequently apply for a medical examination when their health deteriorates, those with associate and university degrees turn to a physician for an examination once per year, on their own initiative: $\chi^2=261.60 > \chi^2(9 \text{ and } 0.05)=16.919$; $p < 0.05$. Nutritional habits are significantly linked to the education level of the elderly when it comes to the consumption of fruit and fish, which has also been confirmed with an adequate test of statistical significance, pertaining to the structure of the given responses. Concerning alcohol consumption, the least favorable responses ("drinks regularly" and "drinks moderately") were obtained in the category of the least educated, with an χ^2 test value of $131.92 > \chi^2(6 \text{ and } 0.05)=12.592$; $p < 0.05$. Maintaining personal hygiene was checked through the statements regarding the frequency of washing one's hands and bathing, which is also statistically significantly related to the education level of the elderly.

It has been concluded that the general awareness level, acquired through schooling, is a significant generator of healthcare attitudes and behavior, which carries significant repercussions on the healthcare of the elderly. Bearing this in mind, it is vital that their awareness level regarding healthcare be raised through various education forms: counseling

activities on the level of the healthcare department, mass-media, and other sectors in the community, which would more significantly lead to the promotion of behavior towards one's health and the healthcare state of the elderly population.

Key words: Elderly, Education, Behavior

12. DECENTRALIZACIJA U SISTEMU ZDRAVSTVENE ZAŠTITE

12. DECENTRALIZATION IN HEALTH CARE

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Definition of decentralization of power-transmission, management and decision-making from the national to sub-national levels, or from higher to lower levels of government (central government). The term covers a wide range of concepts that must be carefully analyzed before a decision on whether the proposed reform programs should support the decentralization of some functions in the health care system.

Analytical approaches to decentralization

1. Access to Public Administration
2. Access fiscal choices (fiscal federalism)
3. Access to social capital
4. Access to the principal agent
5. Access to space for decision

Typology of decentralization

1. Deconcentration (administrative decentralization)
2. Devolution (political decentralization)
3. Delegating (organizational decentralization)
4. Privatization (ownership decentralization)

The importance of social capital

Social capital is defined as a public good created mutual aid citizens in society, increase economic capital is often associated with declining social capital, increase social capital in the community is very important to the development of health care at this level.

Access to space for decision

Built on the principal agent approach with the aim to make a difference in the mechanisms of the central government (as a principal) can be used to influence the election of local government (as principal agent) through two mechanisms: by defining eligibility rules that have allowed local authorities (space for decision), providing incentives to encourage local decision makers to choose the option favored by the central government.

Decentralization is an attractive alternative to centralized administration which is difficult to be close enough to service users and to quickly and adequately respond to their needs and expectations.

Large centralized systems in the former socialist republics were: inefficient, rigid-are introduced slowly change and innovation, alienated- doovljno no responsibility for the determinants of people's health-environment, the behavior and legacy, are subject to political manipulation.

Decentralization is not an automatic solution to these problems!

Decentralization is seen as an effective method in population coverage with better health care, better allocation of resources (resources) to poreba population, community involvement in decisions about priorities in health care, reduce health inequalities.

What can not be decentralized?

1. The formulation of the basic framework of health policy with the goals and objectives that should be achieved in a reasonable time,
2. Monitoring, evaluation and analysis of the health status of the population,
3. Strategic decisions on the development of resources (especially human),
4. Legislation pertaining to public safety including accreditation and licensing

Experience with decentralization in the former Yugoslavia

1. 1945-1952, centralized administrative control;
2. 1953-1960, The social and self-management;
3. 1961-1973, Self-management in health care financing through municipal and community security;
4. 1974-1989, the joint Labour Organization (OURi) and self-governing communities of interest (Sizov);
5. 1990-2002, striking the centralization of all administrative and management functions at the national level.

Decentralization in Serbia today

The health care system is highly centralized at the national level. Health Care Act lays down that all health institutions established by the Government, the Government and the Ministry of Health, the Director of the health institutions, the Government and the practical control system, the Law on Local Self-Government (Official Gazette 9/2002) - provides for the establishment of municipal odogvornost institutions PHC; law on the competence of the autonomous province (Official Gazette 6/2002) - provides that province: established medical institutions, propose the network, bringing special programs, establish fees for services.

Strategic orientations

Document health care in Serbia-anticipated fourth goal of achieving "sustainable healthcare system with selective decentralization and transparency in the management of resources and the expansion of funding sources";

The vision of the health care system in Serbia - the guiding principle 5 refers indirectly to increase decentralization-participation of the private, for-profit and non-profit sector in the provision of health care finansirane by HIF;

The reform strategy-adoption of key laws to decentralize the founding of the medical institution, the election of directors and management committee and realizing common interest in certain areas

Prerequisites for successful decentralization

1. Political commitment
2. Constitutional / legislative framework
3. Financial decentralization and resource mobilization
4. The development of managerial functions
5. Human Resource Management
6. Community Participation

Role of the Ministry of Health in decentralized systems

1. Health policy formulation and strategic decision making
2. Establishment of norms and standards and the development of clinical guidelines (protocols for)

3. Fair distribution (allocation) of resources
4. Development of health information systems
5. Evaluation of the performance of the health care
6. Quality control, licensing and accreditation
7. Regulation of the private health sector
8. Networking and cooperation with international agencies and organizations

Authorities still seek to centralize and get success and failures decentralize!

13. PREDIKTORI PUŠENJA ZDRAVSTVENIH RADNIKA U SRBIJI

13. PREDICTORS OF SMOKING AMONG SERBIAN MEDICAL PROFESSIONALS

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Background: According to the number of active smokers, Serbia occupies high positions in Europe, as well as worldwide. More than 47% of adults are smokers according to WHO data.. Smoking physicians are setting a bad example to the patients, they are uncritical to this habit, rarely ask patients whether they smoke and rarely advise them not to smoke. These facts contribute to the battle for reducing the number of medical workers who smoke, as well as the number of smokers among general population.

Methods: The aim of the study was to determine the smoking behavior, knowledge and attitudes and cessation advice given to patients by healthcare professionals in Serbia. Stratified random cluster sample included all types of health institutions in Serbia excluding Kosovo. The self administrated questionnaire was used to collect data about smoking habits, knowledge, attitudes and cessation advice to patients given by health professionals in Serbia.

Results: Of the 1383 participants, 45.60% were smokers, of whom 34.13% were physicians and 51.87% were nurses. There were 46.4% of male and 45.4% of female smokers. Mostly of smokers were employed at military hospital Nis (48,3%) and VMA Belgrade (52%) and smallest prevalence of smokers was among employed at primary care institution (36%) and Institutes (39%)

Conclusions: As a result of this survey, there are needs for more aggressive nationwide non-smoking campaigns for physicians and medical students. Experiences from countries where physicians smoke less and more effectively carry out smoking cessation practices need to be shared with Serbian physicians in order to improve Serbian physician smoking behavior and their smoking cessation practices.

Keywords: Physicians, Smoking habits, Smoking cessation, smoking counseling, Ser

14. UČESTALOST I PREDIKTORI NAVIKE PUŠENJA CIGARETA MEĐU STUDENTIMA MEDICINE U KOSOVSKOJ MITROVICI

14. PREVALENCE AND PREDICTORS OF CIGARETE SMOKING AMONG STUDENTS OF MEDICAL FACULTY IN KOSOVSKA MITROVICA

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Objective: was to determine the prevalence of smoking among students of the Medical faculty in Kosovska Mitrovica and association among smoking and main socio-economic and demographic characteristics of respondents.

Method: The research was conducted as a cross sectional study on a representative sample of medical students in Kosovska Mitrovica, in December 2011. The sample included all students who are in that period attended practical classes, and they agreed to participate in the survey, their 425. As a research instrument was used Questionnaire about behavior and health. For assessment an association of smoking and socio-economic and demographic characteristics of students was used single and multiple binary logistic regression, with a significance of 0.05.

Results: Cigarette smoking was present among 22.6% of medical students in Kosovska Mitrovica. Single binary regression as predictors were distinguished following variables: gender, age, course of study, years of study, number of lost years of study, the average time of learning, employment and the satisfaction with pocket money ($p < 0.05$). Multiple binary logistic regression as predictors distinguished the following variables: the course of study, years of study and the satisfaction with pocket money ($p < 0.05$).

Conclusion: Nearly one in four students of the Medical Faculty in Kosovska Mitrovica is smoker. This bad habit is the most common among students of integrated studies of health care, students of higher years of study, as well as students who are not satisfied with their pocket money.

Key words: prevalence, predictors, smoking, students

15. STAVOVI U VEZI SA SOCIJALNOM PRIHVATLJIVOŠĆU I
UČESTALOST KORIŠĆENJA ALKOHOLA STUDENATA MEDICINE U
KOSOVSKOJ MITROVICI
**15. ATTITUDES REGARDING THE SOCIAL ACCEPTABILITY AND
FREQUENCY OF ALCOHOL USE BY MEDICINE STUDENTS IN
KOSOVSKA MITROVICA**

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Introduction: Even though alcohol is the third most common cause of death right next to cancer and cardiovascular diseases, the alcohol consumption is socially acceptable behavior around the world. In this country, alcohol represents a particular pattern of the youth behavior including the student population.

Aim: The aim was to determine the frequency of alcohol use among students of the Medical Faculty in Kosovska Mitrovica, the association of this habit with the basic socio-economic and demographic characteristics of the respondents and to analyze the attitudes regarding social acceptability of drinking alcohol in the communities where they live and among the colleagues.

Methods: The survey was done as a cross sectional study on a representative sample of medical students in Kosovska Mitrovica during the period from the 12th to 16th of December in 2011. The sample included all students who agreed to participate in the study and attended the practical teaching during that time. The survey instrument was a Questionnaire about Behavior and Health. The frequency differences were tested by hi-square test. Man-Whitney U test and Kruskal-Voliso test were used to process the data without normal distribution (delivery). The criterion for statistical significance was $p < 0.05$.

Results: During the week preceding the survey, 40.7% of medical students in Kosovska Mitrovica had consumed alcohol. Male, older, senior students and those who renewed a number of years had drunk alcohol more often. It was found by Kruskal-Voliso test that there was a significantly higher number of consumed drinks during the weekend by those students who had had alcohol for the first time in a café in the presence of their parents ($p < 0.05$). In the societies where consuming alcohol is socially acceptable, the use of drinks was significantly higher during the whole week and during weekends ($p < 0.05$).

Conclusion: During the week preceding the survey, nearly one of two medical students in Kosovska Mitrovica had consumed alcohol. Most of the students stated that they had tried alcohol for the first time at home in their parents' presence and they had the opinion that the alcohol was socially acceptable in the communities they lived in and among their colleagues.

Key words: frequency, social acceptability, alcohol, students.

16. AFEKTIVNI POREMEĆAJI KAO JAVNOZDRAVSTVENI PROBLEM U VOJVODINI

16. AFFECTIVE DISORDERS AS PUBLIC HEALTH PROBLEM IN VOJVODINA

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Aim: To determine participation of affective disorders in the structure of outpatient and hospital morbidity of the adult population in Vojvodina in the period 2002 - 2010.

Material and methodology: The analysis was conducted based on routine health statistics data concerning outpatient and inpatient morbidity. As sources of morbidity data were used "Reports about diseases, conditions and injuries," prepared by services of the general practice and occupational health as well as hospitalization databases of the Institute of Public Health of Vojvodina.

Results: In the period of observation in services of the general practice and occupational health, the number of affective disorders has doubled (from 20 425 to 39 057) and in 2010 they accounted for a quarter of all registered mental health disorders. The upward trend of affective disorders was also recorded in hospital morbidity, in such a way that their participation in the structure of patient treated for mental health disorders increased from 16% to 20%, while the rate of hospitalization for depression, as the most important disorder in this subgroup, increased from 53.9 / 100,000 to 90.5 / 100,000 inhabitants. Among hospitalized for affective disorders the proportion of males increased from 35% to 41.7%, while the number of depressive disorders in this population was doubled (from 383 to 764 cases).

Conclusion: Since 2002 affective disorders have been increasing in Vojvodina, especially among males, resulting in gender differences reduction in the structure of hospitalized patients.

Key words: affective disorders, depression, morbidity, gender

**POSTER PREZENTACIJA:
POSTER PRESENTATION:**

**TEMA 1: PLANIRANJE I IMPLEMENTACIJA PROGRAMA ZA
PROMOCIJU ZDRAVLJA**

**TOPIC 1: PLANNING AND IMPLEMENTING HEALTH PROMOTION
PROGRAMS**

**1. ZDRAVSTVENO VASPITNI PROGRAM PREVENCIJE I KONTROLE
KONZUMIRANJA ALKOHOLA U POPULACIJI ŠKOLSKE DECE
1. HEALTH-EDUCATIONAL PROGRAM OF PREVENTION AND
CONTROL OF ALCOHOL CONSUMING BY SCHOOL CHILDREN
POPULATION**

Stefanović Ana ¹, Radulović O², Jović S², Milosavljević D¹, Šagrić Č².

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Younger people in our environment try alcohol earlier (in the age until 14, they try it already with 12 years).

Aim of study: Producing a health-educational program for prevention and control of drinking alcohol by school children population.

Method of study: A suggestion of health-educational program is given, which is coordinated to the methodology of making an educational program (observing the existing situation, determination of priorities, making a plan, realization of the plan, and evaluation)

Results: Participants in the program are volunteers, pupils of the primary school's 8th grade (future peer educators), teachers of the primary schools and psychologists.

Aims of the program are: Reducing the number of alcohol consumers by children at the age of 13-15 years for 30 % per year; increasing for 60 % by 13-15 years old children and their parents who have enough knowledge about harmfulness of alcohol consuming.

Train the teachers so they could educate the parents and train the pupils - future peer educators. Training the volunteers - pupils of 8th class in order to conduct the peer education on subjects about harmfulness of alcohol consuming. Motivating the school children, their parents and teachers for life without alcohol.

Action plan of the program includes: **Organizational team meeting** of the Centre for health promotion with the school directors and teachers; **Training the teachers** by well trained educators, doctors from Centre for Prevention and paediatricians from Health center, during the two daylong seminar. **Two-day seminar about peer education** for teachers and school psychologists, done by the Health Promotion Centre; Trained teachers **introduce the program to the parents** and sensibilibite them to support the program ; Trained teachers and school psychologists **train the pupils, future peer educators**, about harmfulness of

consuming alcohol; trained peer educators **conduct the peer education** about harmfulness of consuming alcohol through workshops.

Following and evaluating successfulness of the program realization will be done by questionnaire for evaluating the program, where pupils could grade the program.

Following and evaluating achieved program effects will be done through: filling out pre and post test as anonymous questionnaire by pupils, parents and teachers; recording includes program participants; Estimation of an amount of distributed educative material.

Program sustainability: It is expected that trained teachers could continue independently with training of peer educators in the next generations of pupils, and enable in that way continuously conduction of program.

Keywords: alcohol, health-educational program, school children

2. UČEŠĆE STUDENATA UNIVERZITETA U NIŠU U PROGRAMIMA VRŠNJAČKE EDUKACIJE

2. THE PARTICIPATION OF STUDENTS OF THE UNIVERSITY OF NIS IN PEER EDUCATION PROGRAMS

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Engaging skilled and motivated students through informal or organized educational interventions with their peers can have a significant impact on increasing the quantum of knowledge about the health risks, the adoption of desired attitudes, gaining skills and motivation to take responsibility for their own health, the users of such interventions.

The aim of this study was to determine how gender of the students, affiliation in a particular group of faculty and assessment of their own knowledge about specific health risks (smoking, use of alcohol and other PAS, physical inactivity, inadequate nutrition, irresponsible sexual behavior and stress) influence on students' decision to participate in health education programs aimed at other students through peer education.

The study covered the 519 students of both sexes, of the University of Nis in 2006. - 07 year. For comparison frequencies were used χ^2 test, Pearson test, Mann-Whitney test, Kruskal-Wallis test, univariate and multivariate analyzes.

More students from groups of medics said that they would take part in health education programs (55.0%) than in the group of non-medics (45.0%). Female students were significantly more interested in participating in the implementation and realization of health-education programs than men and 67.8% of them (32.2% male). Most students assess their knowledge related to the use of PAS as excellent and that 33.3% of them, while the lowest number of students assessed their knowledge as excellent in health aspects related in stress (11.2% of the students).

It was fortified that the most significant impact on students' decision to participate in peer education programs belonging to one of two groups of faculty, subjectively assessed the level of knowledge about STIs and HIV / AIDS that is relative to the knowledge of the other risks at a higher level and reasons that are not included in the models analyzed in this study.

Keywords: students, peer education

3. PREDLOG ZDRAVSTVENO-VASPITNOG PROGRAMA PREVENCIJE I KONTROLE RAKA GRLIĆA MATERICE NA TERITORIJI NIŠAVSKOG OKRUGA

3. PROPOSAL OF HEALTH AND EDUCATIONAL PROGRAMME FOR PREVENTION AND CONTROL OF CERVICAL CANCER IN THE TERRITORY OF THE NISHAVA DISTRICT

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Summary

Programme title: *Stop to Cervical Cancer*

Recognizing the problem, situation analysis and needs assessment for programme: According to World Health Organization data the cervical cancer is the second most common cancer in women worldwide. Incidence and mortality rates are the highest in nondeveloped countries.

According to the official data of population-based cancer register of Serbia, in 2002 standardized incidence rate of cervical cancer was 27,2 and it was the highest in Europe. The age distribution shows typical increasing after the 30th year of life and its maximum is between 45-59.

Early diagnosis is essential because in many cases it reduces a fatal outcome in patients.

Planing of programme. The aim of the Programme is to educate and motivate women from the territory of Nishava District in order to prevent the cervical cancer.

This would significantly reduce morbidity and mortality from cervical cancer.

Implementation of the programme: Include all relevant representatives of the entire local community that can contribute to the successful implementation of the project to load the malignant disease effectively put under control.

Monitoring of the programme: Implement a continuous monitoring and if necessary perform the correction of certain activities.

Program evaluation: The realization of the aims of the program will be considered through the routine health statistics through which to monitor the increase in the number of preventive examinations for cervical cancer.

Key words: health education, cancer of cervix uteri

4. PROMOCIJA ZDRAVLJA VEZANA ZA PUŠENJE CIGARETA KOD ADOLESCENATA GRADA NIŠA

4. HEALTH PROMOTION RELATED TO CIGARETTE SMOKING IN ADOLESCENTS OF NIS

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During puberty and adolescence is a time of rebellion and resistance, expressing disagreement with the adults and smoking cigarettes is that as a sign of maturity. The aim of this paper is to examine the level information of adolescents in the city of Nis of the hazards of smoking in order to remain healthy and designing appropriate health-promotion program for not only the present generation but also the future of young people. We tested the proportional stratified sample (by 2 classes VII and VIII grades of elementary school and first and second year of secondary school) in the city of Nis. Responded to the survey 40 elementary and middle schools, and two schools refused. The survey was conducted in May 2012, attended by 3470 participants, aged 12-17 years. The instrument of the study was a questionnaire with 60 questions, which was designed by Counseling young and the Health Centre Nis and Department for children, social and primary health care. Results showed that adolescents (both sexes) try smoking cigarettes at the age of 12-13 years. Many students believe that smoking is harmful, but not as much as the story. The influence of peers that smoke cigarettes themselves a large share. Regardless of variety campaign against smoking adolescents continue to minimize the problem of smoking cigarettes and ignore all those heavy and long-term health consequences of smoking brings. The results suggest that health education activities related to the problem of smoking cigarettes, which are usually implemented Counseling for young people, should be intensified in a very risky period of their education, and we believe that it is starting to higher grades of primary school and the first year of secondary school.

Keywords: smoking, prevention, adolescence

5. PROGRAM ZA PROMOCIJU ZDRAVLJA U OKVIRU IMUNIZACIJE DECE I VULNERABILNIH GRUPE U REGIONU CENTRA ZA JAVNO ZDRAVJE BITOLA U PERIODU 2008-2011G .

5. PROGRAM FOR IMMUNIZATION OF CHILDREN AND VULNERABLE GROUPS IN THE REGION OF CENTER FOR PUBLIC HEALTH BITOLA,2008-2011.

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Center for Public Health Bitola, R. Macedonia

Aim: Make a Immunization program as an integrated system for planning, vaccination, records and supervision of immunization with the continued health promotion in order to increase the percentage of immunization of children, adolescents and other vulnerable groups.

Material and Methods: We use the results of regular monitoring and the immunization reports in the period 2008-2011, the results of extraordinary campaign for immunization, the role of the media and social networks in terms of the success of immunization (> 95%) in the regions of Centre for public health – Bitola.

Results: Analysis of immunization reports in the period 2008-2011 shows a decline in the percentage of immunization of 2-3%, very low HPV coverage (<40%) as a result of negative media campaigns, increase the percentage of parents who refuse to immunize their children; MUMPS epidemic in 2010. Extraordinary campaign to immunize communicated active collaboration visiting-nurse services, epidemiologists and health promotion services to media coverage showed excellent results in finding unrecorded, unimmunized persons especially in rural areas and settlements.

Conclusion: “Immunization is one of ten great public health achievements in the 20th Century”. Success of immunization and control of infectious diseases must be result of consolidation of all factors in the immunization system. Results off additional campaign showed that these actions have a positive impact on the level of immunization and, as such, must be implemented in the national health care program.

TEMA 2: MENADŽMENT U ZDRAVSTVU
TOPIC 2: HEALTH MANAGEMENT**6. VAŽNOST INTEGRISANOG PRISTUPA U UNAPREDJENJU**
KVALITETA RADA ZDRAVSTVENIH USTANOVA
6. THE IMPORTANCE OF INTEGRATED APPROACH IN
IMPROVEMENT OF QUALITY OF WORK OF HEALTH FACILITIES

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Aristotle said: „Quality is not just an act, it is habit“. In health system, quality is recognized as one of the most important characteristics of public and private health sector. Quality improvement and patient safety should be an integral part of everyday activities of all employees in health facilities (Strategy for continuous improvement of health care quality and patient safety, Official gazette Republic of Serbia, 55/05, 75/05, correction, 101/07, 65/08).

Quality of health care is assessed through assessment of „structure-process-output“. Legislative framework for assessment of quality of health facilities and health care in Republic of Serbia is made by: Law on health care (Off. gazette RS, 107/05); Regulation of health care indicators (Off. gazette RS, 49/2010); Strategy for continuous improvement of health care quality and patient safety (Off. gazette RS, 55/05, 75/05, correction, 101/07, 65/08); Action plan for implementation of Strategy for continuous improvement of health care quality and patient safety (Off gazette RS, 40/2010; Methodological manual of reporting on health facilities indicators of health care quality (Ministry of health RS, Public Health Institute „Dr Milan Jovanovic Batut,,).

Program of quality improvement and quality assessment in health facilities in RS rely on following programs activities: Assessment of quality through by the law defined indicators; Assessment of patients and employees satisfaction; Organization of accredited educations; Educations related to Management in Health; Licensing of health staff; Waiting lists; Appointment of the Patient Advocate in all health facilities; Constitution of commissions for quality in all health facilities in RS; Ranking of health facilities according to quality of work; Implementation and developing of integrated approach in improvement and assessment of quality.

Systems which support and allow continuous improvement of quality in health are: Law and regulations; Total Quality Management; Systems of quality indicators assessment; Professional standards and protocols; Licensing; Accreditation; Certification; risk Management; Assessment of Health technologies; Registering complaints and nonconformities; Participation of health inspection; Planning of health care according to real needs; Resource allocation; Analyses of health status..

Integrated approach, which integrates all systems for quality improvement and assessment, is the only serious approach which leads to improvement of health care and health facilities quality.

Key words: quality of work, health facilities, integrated approach

7. PROCENA ZADOVOLJSTVA LEKARA PRI PRUZANJU
ZDRAVSTVENIH USLUGA U SPECIJALISTICKO-KONSULTATIVNIM
AMBULANTAMA U SKOPLJU

**7. EVALUATION OF THE SATISFACTION THE DOCTORS HAVE
ABOUT HEALTH CARE SERVICES IN THE SPECIALIZED AND
CONSULTATIVE CLINICS IN SKOPJE**

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Aim: To evaluate the satisfaction the doctors have while working and ensuring health care services in the specialized and consultative clinics in Skopje.

Materials and methods: In order to rate the satisfaction the doctors have while providing health care services, it has been conducted a survey that included 200 doctors – specialists from different areas, 100 from the clinics of Clinical Center – Skopje and 100 from Health Care Center – Skopje. For that purpose it was made specially designed questionnaire. The survey was performed on the doctors in the period from 1 of June to 30 of June, 2012.

Results: More than 70% of the doctors in the both health care centers consider the positive list, the price and the availability of the medicines as problems which restrict them from choosing the best medicine. Round 50% of the doctors in the both health care institutions said that they have enough time to dedicate themselves on each patient particularly. Just 28% of the doctors from Clinical Center – Skopje and 32% from Health Care Center – Skopje think that the equipment in their clinic can meet the need for working. 92% of the Clinical Center and 95% of the Health Care Center considered their monthly income as low and they think that it doesn't correspond with their invested efforts and amount of work.

Conclusion: The doctors – specialists mostly are not satisfied from the terms and conditions where they work. There are no statistically significant differences between the doctors from specialized and consultative clinics in Health Care Center – Skopje and Clinical Center – Skopje in relation when in relation of rights of choosing the medicine, terms of work and motivation.

Key words: Doctors – specialists, satisfaction, terms of work.

8. ISPITIVANJE ZADOVOLJSTVA PACIJENATA ZDRAVSTVENOM NEGOM MEDICINSKIH SESTARA U SEKUNDARNOJ I TERCIJARNOJ ZDRAVSTVENOJ ZAŠTITI NA TERITORIJI NIŠAVSKOG I TOPLIČKOG OKRUGA U 2011. GODINI

8. ANALYSIS OF PATIENT SATISFACTION CONCERNING NURSING CARE IN SECONDARY AND TERTIARY HEALTH CARE IN THE TERRITORY OF NIŠAVA AND TOPLICA DISTRICTS IN 2011

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Aim: To determine the level of patient satisfaction with nursing care in secondary and tertiary health care in the territory of Nišava and Toplica districts in 2011.

Methodology: A five-day anonymous poll including questionnaire defined by The Ministry of Health of The Republic of Serbia, which contains 13 questions with given answers where patient circles one of the given answers, has been conducted. Study results are displayed graphically and in percentage. Data were entered and processed and the graphs constructed using the Microsoft Excel application from Microsoft Office package 2007 version. PASW Statistics 18.0 was used for frequency comparison of attributive variable categories performing Chi-square test.

Results: At Internist ward, the highest percentage of patients declared as very satisfied with respect and kindness of nurses (63,9%). Only 0,5% of patients declared as very unsatisfied with respect and kindness of nurses, 1,2% of patients declared as neither satisfied nor unsatisfied.

At Surgical ward, the highest percentage of patients declared as very satisfied with the time of waiting for a nurse during emergency (54,3%), 1,1% of patients declared as neither satisfied nor unsatisfied. Only 0,4% of patients declared as very unsatisfied.

At Obstetrics and Gynecology ward, the highest percentage of patients declared as very satisfied with explanation of procedures, tests and treatments of nurses (51,9%), none of the patients declared as very unsatisfied and unsatisfied and 6,3% of patients declared as neither satisfied nor unsatisfied.

At Department of Physiotherapy and Rehabilitation, 33,9% of patients declared as satisfied with kindness towards family members and visitors of nurses and 66,1% of patients declared as very satisfied.

In the Graf 7d, general satisfaction with nursing care is shown. Almost 100,0% of patients are satisfied with nurse care.

Conclusion: Patients satisfaction with different segments of quality of provided health services, on presented departments, is very high (mostly over 50,0%). General satisfaction with nursing care is very highly marked (almost 100,0%). The results of this analysis of patient satisfaction concerning nursing care in secondary and tertiary health care is very high and client – oriented approach in these facilities is completely accepted.

9. MENADZMENT U JAVNOM ZDRAVSTVU- REFORME U ZDRAVSTVU
I UPRAVLANJE PROMENAMA U PERIODU 2006-2012G
**9. PUBLIC HEALTH MANAGEMENT-HEALTH REFORM AND
CHANGE MANAGEMENT IN THE PERIOD 2006-2012**

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Goal: Display results in public health reform in the field of action of the Centers for Public Health in the period 2006-2012 years and the role of management in the reform problem solving and change resistance.

Material and Methods: Analysis of major health reforms in the period 2006-2012g, and their implications in public health, with special emphasis on the specialist-consultative health care in the form of a SWOT analysis.

Rezultat: Significant health care reform in R. Macedonia: family doctor, nursing home reform, DRG, service packs, a new system of referral and medical procedures. While all the reforms focused on quality in health care has been shown that patient satisfaction is not proportional to the satisfaction of health workers in public health because these reforms are not accompanied by sufficient financial support. Resistance to change, volume of administrative records and more incomplete electron system in health care is still a big part of business management team..

Conclusion: Centers for public health in Macedonia are well adapted to the reforms as a result of the new law for public health compatible with EU regulations. The important role of the positive reforms realized the way of funding these institutions and the ability to work on projects. Yet the inability of the Incentive Payment system implementation and slow change of organizational culture is the biggest problem in the Management of changes in public health versus private health institutions.

TEMA 3: SOCIJALNO-MEDICINSKI ASPEKTI ZDRAVLJA
TOPIC 3: SOCIO-MEDICAL ASPECTS OF HEALTH**10. ANALIZA FAKTORA RIZIKA ZA POJAVU SIMPTOMA NESANICE KOD STUDENATA MEDICINE**
10. ANALYSIS OF RISK FACTORS FOR SYMPTOMS OF INSOMNIA IN MEDICAL STUDENTS

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Introduction. Insomnia is a condition of inadequate quality and quantity of sleep.

Objective. The aim of this study was to examine the relationship of potential risk factors for symptoms of insomnia in medical students.

Materials and methods: The study was designed as cross-sectional study, conducted in March 2011 and includes 392 student Faculty of Medicine Pristina-Kosovska Mitrovica. The intensity of the symptoms of insomnia were assessed using the Athens Insomnia Scale with 5 items.

Results: The average value of the total score for all respondents to the AIS-5 was 3.2 ± 2.5 . Falling asleep was more difficult for females ($p = 0.049$) and the Bologna students ($p = 0.037$). More problems with the night waking up have had students who are studying at Bologna ($p = 0.045$). The problem of night waking was more common in females ($p = 0.025$) and students with lower marks ($r = -0.12$, $p = 0.023$). Unexpectedly awaking in the morning was more often to dental students ($p = 0.038$) and females ($p = 0.005$). With length of sleep were not satisfied more often dental students ($p = 0.005$). Shorter sleep dental students ($p = 0.018$). Quality of sleep was lower in females ($p = 0.034$), a students studying at Bologna ($p = 0.010$), younger students ($r = -0.14$, $p = 0.005$) and students of lower year study ($r = -0.15$, $p = 0.002$).

Conclusion: The female students more difficult falling asleep, more often wake up at night and early in the morning, and they are less satisfied with the quality of sleep. Students at Bologna more difficult falling asleep, have more problems with waking up at night and are not satisfied with the quality of sleep. Dental students are sleeping less, more often wake up in the morning and are not satisfied with the quality of sleep. Younger respondents and students of lower year have a lower quality of sleep. Accommodation during the study does not affect the quality of sleep.

Keywords: symptoms of insomnia, medical students.

11. STEPEN NEZAVISNOSTI U DNEVNIM AKTIVNOSTIMA KOD STARIH PACIJENATA SLUŽBE KUĆNOG LEČENJA

11. INDEX OF INDEPENDENCE IN ACTIVITIES OF DAILY LIVING IN ELDERLY WHO USING HOME CARE SERVICE

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If we take into the consideration that lifespan in last 60 year is longer for 21 year, the independence and quality of life in elderly are becoming big public health problem.

The aim of our study was to estimate the level of independence in activities of daily living.

In this cross-sectional study participated 249 subjects-patients of Home Care Service (169 were female and 80 were male). The mean age was $80,93 \pm 6,63$. The level of independence was determinate though total Katz score-KS (Katz index of independence in activities of daily living). Participants were divided into two groups: KS 0-3 i KS 4-6.

There is statistically significant difference in KS between patients who live in the countryside and those who live in the city ($p=0,034$). There is no found statistically significant difference between groups related the mean age ($p=0,108$) and educational status ($p=0,873$). 12,4% of participants don't take drugs regularly. Participants with higher KS take drugs more regularly and there was statistically significant ($p=0,016$). For 10,6% of patients in group with higher KS no one cares. There is statistically significant higher compared with other group ($p=0,002$). Only 19,7% of responders have been on rehabilitation and one third of patients have assessed their economic status as poor.

Our results are previous representation of these problems and they direct attention to need for preventive work, especially in rural environment. It's necessary to estimate comorbidities and theirs influence on KS which is the aim of our further researches.

Keywords: Katz score, index of independence, elderly

12. OBIM I TREND PRUŽANJA PREVENTIVNIH ZDRAVSTVENIH USLUGA ODRASLOM STANOVNIŠTVU NIŠAVSKOG OKRUGA

12. THE EXTENT AND TREND OF THE PROVISION OF PREVENTIVE HEALTH SERVICES TO ADULTS IN THE NIŠAVA DISTRICT

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The aim of the work is to assess the extent and trend of providing preventive services, and the scope of the adult population and health services and their average number per doctor in the health care of adults of the Nis district health centers, in the 2008-2011 period.

Methodology and data source: retrospective comparative socio-medical scientific method was used, applied to data from the annual reports on the execution of the work plan that is obtained from health centers as a result of an examination and opinion.

Preventive health services by the health care of adults have been viewed collectively, without an analysis of the structure of individual services.

Conclusion: Adverse socioeconomic conditions with inadequate funding of preventive health services, have led to the segmentation of work, inharmonies and domination of curative over preventive services, thereby threatening the essence of existence of primary health care. To reach the reorientation of the trend in the provision of health services from curative to preventive, and further improve work in the field of preventive health care, we should keep to some definitive solutions:

The starting point for the good performance of preventive health services is adequate planning, with respect to laws and regulations and professional and methodological guidelines as well as adjusting the plans to real capabilities of health centers (especially "small" health centers in poor, rural areas)

Monitoring and controlling the implementation of plans and programs of health care services is performed by competent Institutes/Departments of Public Health; it is useful to supplement their jurisdiction with the control of basic medical documents and records, which should be carried out periodically in all health facilities in the Network Plan

Positive law acts, in addition to solutions related to personal income of health workers on the basis of performance (capitation formula), where the percentage of realized preventive services has a significant role, should include regulation-correction factor for the population response for preventive health services, and to introduce legal consequences for those policyholders who unjustifiably avoid this segment of health care.

13. STRES KAO RAZLOG POREMECAJA ZDRAVOG NACINA ZIVOTA 13. STRESS AS CAUSE FOR DISRUPTING HEALTHY LIFE STYLE

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Objective: Find out how much stress is in one men's life, during one week. Who are the most intensive stress factors who are feeled and how they influence at all aspect of healt. And is there conection between stress and age, sex, education, working staus.

Materials and methods: We used the questionnaire "How and with what intensity stress influence on different parts of your life" for a stress indicator, in period of one week (Couselind Team International). The questionnaire have different indictory group questions who are reffered to: influence of stress on physical health, quality of sleeping, behavioral, emotions and personal habbits. The evaluation was reffering on a scale of frequency of a single stress factor/week: regulary (5 times a week), frequently (3 times a week), sometimes (1-2 times a week) and almost never (less than 2 hours a week).

Results: We questionned 153 persons, by casual choise. From that 82 are women. 62 persons are working, 35 students and the rest are unemployed or housewifes. Age is from 18 to 64 years, in the municipality Bitola, November 2011.

With processing the data we found: At first plase with the most poents, which are reffering on high and dangerous zone of stress, are the indicators of physical health (> 48 points). On second placeare emotional indicators (>37 points) and on third place are indicators of personal behaviour (>25 points). Reffering to the sex: women have more emotional stress, and men have more physical stress. The most dangerous exposioure have eployes with the highest number of points in the zone of physical stress indicatos. In students on the first place is stress indicators for personal behaviour.

Conclusion: Small as it seemed, but constant, everyday quantity of stress can be reason for disrupting physical, psychical and social wellbeing - health. Because of that, we have to act in time in finding and reducing the influence of stress factors. But we must first find those stress indicators who are in high or dangerous level, depending on the scale of risk.

Key words: stress, health, week, indicators, dangerous zone

**SESIJA MIKROBIOLOGIJA
MICROBIOLOGY SESSION****TEMA: MIKROBIOLOGIJA DANAS
TOPIC: MICROBIOLOGY TODAY****PREDAVANJA PO POZIVU
INVITED LECTURES****1. HUMAN DIROFILARIOSES IN ITALY: PERSPECTIVES AND
DIAGNOSIS**

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Human dirofilarioses detected in Italy are mostly due to *Dirofilaria repens* (*D. repens*). The species was firstly identified in humans as *Filaria conjunctivae* (1), and only then in dogs as *Dirofilaria repens*. Until the middle of the last century a few dozen cases were been reported, but in the last 50 years a gradual increase up to more than 300 cases has been observed. Currently, in Italy this dirofilariosis is considered an emerging zoonosis, identified in people of any age, without differences by sex, always amicrofilaraemic. Most infections are subcutaneous, or ocular, or migrating, but aberrant for the species locations have been reported (2, 3). On the contrary, *D. immitis* has been properly identified in only 2 cases, whose only one autochthonous (4) and located in the subconjunctiva.

In Southern Italy human cases overlap species (*D. repens*) and infection rates observed in dogs (5), whereas in Northern Italy human cases are due to *D. repens* even if in dogs is *D. immitis* the prevailing species. The apparent disagreement could be due to the *D. repens* superficial prevalent location that makes easier its discovery, or to a very strong immunitary response to *D. immitis* that could block the worm development at L3, very difficult to be evidenced, as suggested by antibodies also to *D. immitis* detected in people resident in endemic areas (6). Immunocompetition between the two dirofilarial species has also been hypothesized (7), beside the presence of other important sources of infection (like foxes) and an unequal presence/abundance of mosquito species competent vectors.

The increasing number of cases observed in humans correlates with the spreading of dirofilarioses in animals, currently registered even in mountainous northern and central territories, and in areas near to that formerly reported as positive, notwithstanding chemioprophylactic treatments applied. Probably the recent introduction of the very efficient vector *Aedes albopictus* is important (8), but further elements have to be considered: first at all the increased mean temperature and global drivers. In fact, warming favours the vector infection, shortens parasite development times in mosquitoes and supports a lasting of the adult activity, therefore induces a higher number of aquatic cycles/month, but each characterized by a little adult population short living. In these conditions females, which prefer cool habitats, tend to expand toward areas higher or, to date, too cold to be used, probably converted in suitable by global warming. As for global drivers (increasing number

of pets, parallel practice of animal abandoning, travelling in endemic areas with pets, and expanding urbanisation), they make our cities, widely colonized by *C. pipiens* and *Ae. albopictus* (opportunistic feeders and the most important vectors) and strongly populated by humans, pets and free-roaming animals, are expanding towards new peripheral areas where niches suitable for additional vector species exist, and where are located municipal shelters for stray dogs, often untreated against ectoparasites and easy feeding source.

All these elements contribute to increase the human/animal dirofilarioses relevance as a veterinary and public concern: they are reported increasingly and where never before. However, only the pick of an iceberg is noticed, because only subcutaneous nodules or superficial active worm migration urge the patient to seek medical attention, most infections are amicrofilaraemic and many are unreported. Indeed, surgically removed materials are the only start point for a possible diagnosis, and data about the *D. repens/immitis* - infection prevalence have to be considered unreliable, also because diagnosis was, to date, based on microscopic analysis of both histological sections of tissues containing the worm and *in toto* surgically removed specimens. However, being few diagnostic features present in developing worms, often affected by development in unsuitable host, erroneous diagnoses may occur (9).

To overcome these constrains we developed molecular diagnostics specific for both *D. repens* and *D. immitis* (10, 11). They are considered gold method to avoid wrong identifications based on worm location, and „undisputable“ diagnosis mainly where many filarial species are present in animals. Moreover, to detect hidden infections and give a reliable picture of the epidemiology in any study areawee developed home-made ELISAs that use as antigens specific somatic/metabolic polypeptides and permit the detection of specific antibodies to *D. immitis*, *D. repens*, and to filarial endosymbionts *Wolbachia*, present in the worm during all its span life (12, 13).

Perspectives for Italy as for all European countries are the following: first at all coevolution parasite-human host will produce larger numbers of patent human infections, more often microfilaremic. Moreover, if the current trend of climate and global drivers go on, we could observe an intensified dirofilariosis transmission among animals and from animals to humans, due to the increase of vector size populations, mosquito activity all year round, and increased contacts among mosquitoes, animals and people; then, further migration of vectors from temperate regions (turned out too warm) in areas so far too cold and their stable colonization of the newly reached areas. Here, movement of infected and infectious animals may start parasitic cycles similar to that now existing in temperate climates: spring-summer. Therefore, control programs are needed to stop anthropogenic climate changes and their consequences. Moreover, for a successful control among animals and to humans, measures against the increasing urbanization have to be taken, preventive treatments against the source of infection (i.e. microfilaraemic animals) have to be intensified/improved, and accurate entomological studies have to be performed to identify the vector species target for selective control programs.

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2. MICROBIOLOGICAL MONITORING AND DECONTAMINATION OF AIR: METHODOLOGY

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According to the National Center for Health Statistics, 2001 National Health Interview Study, over 7.6 million children 5-17 years and over 12.7 million young adults (18-44 years) suffer from asthma. The United States Environmental Protection Agency (EPA) ranked indoor air pollution among the top five environmental dangers to the public. EPA research also concluded that indoor air can be two to five times (and sometimes as much as 100 times!) more polluted than the WORST outside air! Since research indicates Americans spend 90% of their time indoors, it's no wonder that asthma and allergy suffering is on the rise.

Bioaerosols are individual particles in the air with biological source such as bacterial and fungal cells, spores and pollen. Microorganisms in the bioaerosols are present as very small individual particles that stay suspended for long periods or as larger clumps and aggregates that settle rapidly onto surfaces. They can be an important source of infection in medical facilities and can contaminate sensitive manufacturing operations.

In the absence of formal limits a mixture of bacteria with no predominating colony is considered normal air flora for most environments.

The most common bacterial types found in an indoor air sample are: *Micrococcus*, *Staphylococcus*, *Corynebacterium* and Gram negative non-fermenters.

A mixture of all these organisms is considered normal even if high counts are present. Things to look out for are: high counts of Gram negative non-fermenters - indicate high levels of moisture and high counts of *E. coli* - indicate sewage contamination.

MICROBIOLOGICAL MONITORING OF THE AIR

It is important facilities for production of pharmaceuticals and medical devices (is essential and well established) in hospitals – very important, food factories and even in office buildings and other working environments.

In most countries it is a regulatory requirement, and international standards have been published for biocontamination control in cleanrooms and other controlled environments (ISO 14698-1/2).

The goal of biological sampling is used to locate the sources of indoor microorganisms and facilitate an effective remediation. Sampling provides us with a method to establish in a scientific way whether the environment in question contains more organisms than would normally be present. There are numerous techniques that may be used to evaluate the level of indoor microorganisms. We believe, however, that scientific comparisons are only possible when measured volumes of air are sampled and when results of surveys are expressed in terms of volumetric measurements.

HOW TO AIR SAMPLE

There are no widely accepted protocols or regulations regarding biological air sampling, but some conditions are accepted for proper Air sampling:

all new or refurbishment work has been completed;

all engineering commissioning procedures have been completed;
the ventilation system has been running continuously for 24 hours following completion of structural work (during this time the theatre surfaces and fixed equipment can be cleaned);
and
ducting and air diffuser plates have been cleaned.

There are culturable and non-culturable methods for air sampling

Inaccurate characterization of the area sampled can arise because of: some bacteria and fungal spores can cause disease only when they are alive (viable), others are capable of producing allergies or irritation when no longer living. Cultures may permit greater accuracy in speciating some fungal organisms present, spores vary widely in their ability to grow and compete on laboratory media. Therefore, a complete sampling protocol for the biological flora in any environment uses both a culturable and non-culturable sampling method. Very often in practice this is not possible due to time and budget constraints, so non-culturable methods - provides a more accurate "snapshot" of the air and is usually the best choice when only one sampling method can be used.

Culturable methods can be performed as Passive monitoring (settle plates) or Active monitoring (Air-sampler).

Passive monitoring (settle plates) are performed with standard Petri dishes containing appropriate (usually non-selective) culture media. It is recommended to expose three Petri dishes on three levels/theatre: floor, theatre table and human upper respiratory tract opened for a given time (2- 4h) and then incubated to allow visible colonies to develop and be counted/48h. This method cannot sample specific volumes of air, so the results are not quantitative.



Active monitoring (Air- sampler).. There are two types impingers and impactors.

Impingers – which use a liquid medium for particle collection. Impactor samplers use a solid or adhesive medium (55mm and 90mm plates) such as agar, for particle collection and are much more commonly used in commercial applications than impingers, (100l/min)

Using aseptic technique air sample should be undertaken. By following protocol:

A single sample should be collected from each operating theatre.

Space/ theatre - left vacant for a minimum of 15 minutes, but preferably one hour,

doors must be kept closed - Note: doors must be kept closed and the theatre empty until sampling is complete.

The air sampler should be placed in the middle of the theatre table

The air sampler should then be switched on either by remote control or manually, before leaving the room.

Sampling period 3-5 min.

Sampling volume needs to be greater than 0.25 m³ (250 L) and optimally around 1 m³ (1000 L).

A control sample should be taken from an uncontaminated area for comparison

Samples should be sent overnight to the laboratory to minimize changes in the bacterial population during shipping.

Cultivable methods has some limitations such as:

Can not provide more accurate "snapshot" of the air because of the not detectable particles slowly growing ,microorganisms especially Fungi, "environmental alteration"/stress - agar growth medium in the plates may deteriorate if they are exposed for too long and smaller particles or droplets suspended in the air.

Contamination from non-airborne sources

Overgrowth in heavily contaminated conditions and interpretation of the data they produce can be difficult.

Late results in 3-5 days which unable proper reaction on time

Non-culturable Method

Polym'Air is ultra-rapid and sensitive method. It has two phases: Solid-phase (cytometry) scanning - for the real time enumeration of micro-organisms and Polym'Air – sterile water-soluble gel. Synthetic compound, composed of long molecular chains, doesn't contain any nutrients (ready-to-use standard 90 mm Petri dish).

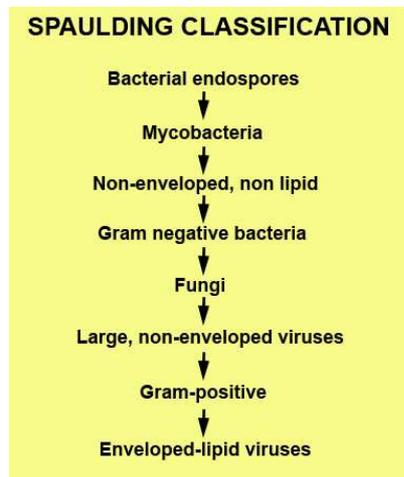


This inert and non selective polymer allows the collection of all micro-organisms including stressed or slow-growth micro-organisms. An air sample is collected using an air sampler which allows the automatic traceability of operator, Polym'Air plate and sampling location through bar code identification and 21CFRpart11 compliant software. (Sampl'Air from AES Laboratorie). Dissolving the polymer 40 ml of sterile Fluid A is added. The solution is then filtered on a 0.4µm membrane in order to concentrate the micro-organisms. Further step is

fluorescent labelling of the micro-organisms present at the liter and counting by scanning with RDI cytometer (Chemunex) which takes 3 minutes per membrane. Unique protocol allows the simultaneous enumeration of mesophilic bacteria, (sporulated or not), yeasts, mycelium, and mould spores within 3 hours.

DECONTAMINATION OF AIR:

Spaulding has given classification of resistant microorganisms that are need to be destroyed by sterilization or disinfection.



Ultraviolet Germicidal Irradiation (UVGI) - UVC 254 (253,7 nm).

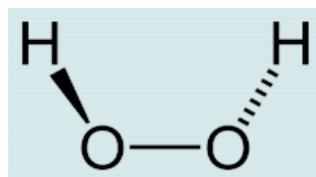
Effects of UV irradiation is intensive germicidal effect.

Mechanisms of this irradiation is converting susceptible microorganisms (viruses, bacteria, fungi) from the environment into inert bio-products

Effective destruction in few seconds as result of double effect over DNA direct alteration over DNA and inhibition of capability for reproduction. UV-dosage is defined by UV intensity and period of time needed for microorganisms to be exposed in «UV killing zone». Most effective when used in:

Controlled environment, micro waves which is calibrated, continuous air flow and in combination with luminary surfaces (AI)

Hydrogen Peroxide Vapour (HPV)



New golden standard for bio-decontamination which archives 6-log reduction of biomass, no-rest residua and minimum waste of time. HPV is improved bio-decontaminate agent with wide spectar of biological activity that can inactivate microorganisms faster and most effectively than lot of traditional bio-decontaminate methods (formaldehyde).

HPV is introduced into a room using a dual axis vapour distribution system, which ensures that the HPV is introduced to the room evenly, and that each surface is comparably exposed to the HPV.

The equipment lays down approximately 1 micron of H₂O₂ onto exposed surfaces where micro-organisms may reside. The micro-organisms themselves act as nuclei for the formation of micro-condensation, thus speeding action of the process.

The room or equipment being exposed to HPV is sealed and monitored by electrochemical hand held HPV sensors to ensure that there is no leakage and that the level of HPV has returned to safe environmental levels after the cycle.

This method obtains high safety level for work, there are no toxic residua. After decontamination is finished the rest of HPV convert catalytically into water steam and oxygen. HPV can completely be neutralised into specific field by using strong aeration or in conjunction with HVAC system in the building.

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Itaviolet Germicidal Lights and Mold Removal: An effective requirement for your Battle against Mold

3. HUMAN *DIROFILARIA REPENS* INFECTION IN HUNGARY: PAST AND NOWADAYS

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In the temperate regions of Europe, mainly Italy, France, Greece, and in recent years. Hungary, a specific filarioid worm, *Dirofilaria* (*Nochtiella*) *repens*, a parasite of dogs, cats and some other carnivores, transmitted by mosquitoes, has occasionally been contracted, causing dirofilariosis in humans. Babes (1879) reported probable the first case of dirofilariosis in Hungary. In Hungary ocular symptoms caused by filarioid worm were described for the first time by Nemeth and Kugler in 1968 (1, 2, 3).

We have noted five probable but not confirmed cases of *Dirofilaria* (*repens*?) infection during almost one hundred years that followed the first of Babes' case. In contrast, seven cases have been published between 1999 and 2000, all of them confirmed as *D. repens* infections (1,4, 5).

The autochthonous occurrence of *D. repens* infections in Hungary has long been suspected but has not been undoubtedly confirmed till 2000. It was the first case of *D. repens* infection in Hungary to be worth reporting in detail in which an intact, living worm has been recovered and identified during thorough macroscopic and microscopic examinations. Furthermore, its autochthonous origin was traced and verified (1, 6, 7).

At the Department of Parasitology, NCE in the period 2001–2011 we diagnosed 73 cases of dirofilariosis caused by *D. repens* in 39 male and 34 female patients. The mean age of the patients was 54 years. *D. repens* was identified on the basis of the morphological characteristics and measured microscopic parameters of the intact worm and in the histopathological section. 29 cases had ocular localization, 43 were subcutaneous and 1 case was diagnosed in a histopathological section of removed axillary lymph node in patient with lymphoid leukemia. We used the Knott concentration technique for detection of microfilariae in 46 cases, with 1 positive result! Most of the patients were living in close or general proximity to dogs and/or cats. In their history in terms of dirofilariosis no significant trips abroad had been recorded. Analyses of the territorial distribution of these 73 cases showed that they were localized on the watershed of the Danube and Tisza River, and in one case in close proximity to Lake Balaton. (1, 8-13, and unpublished data).

Veterinary epidemiological survey from 2005-2008 conducted by Eva Fok and co-workers showed that most of the animals that tested positive (293/1610/18.2% of dogs and 3/67/4.5% of cats) were found on the watershed of the Danube and Tisza River (14).

Several factors may contribute to the apparent increase in observed cases of human and canine dirofilariosis recently reported in Hungary and in other European countries: better knowledge of distinctive features of the parasite in microscopic sections and of its clinical aspects; increased tourism with pets; increased number of dogs and cats kept as pets; a significant number of recent publications drawing the attention of the medical community to the diagnostic probability of dirofilariosis; and climatic change, the spread of the “greenhouse

effect” leading to the extension of the Mediterranean climatic belt to the north, giving better opportunity for both vectors (mosquitoes) and filarias to thrive and spawn infection (15, 16).

Case 1: An eighty-two years old female patient has been examined for complaining of heavy pain in her left eye at the Outpatient Department of Ophthalmology of ” Bugát Pál” Hospital, Gyöngyös in 2001. In rural environment where she lives dogs and cats are present. In her history a travel to abroad was not recorded. By slit-lamp examination a thread-like, moving worm could be seen under the conjunctiva in the temporal region of the left eyeball (Fig. 1). After parabolbar and subconjunctival anesthesia by Lidocain, an 11 cm long living worm has been removed under surgical microscope. The removed worm was identified as *Dirofilaria repens* (8).

Case 2: The 62 year old male patient from Budapest was admitted to the Department of Ophthalmology in May 2005, because of suddenly developed swelling of the left upper eyelid (Fig.2). In the middle third of the upper eyelid smooth, elastic plum-stone-sized nodule has been palpable (Fig.3).Two months from the first symptoms the nodule was surgically removed. During preparation the capsule of the nodule was opened and a whitish living worm has been removed. It shows intensive motion in saline solution during a few ours. The 9, 5 cm long worm was identified et the Department of Parasitology NCE as *Dirofilaria repens* (Fig.4). Examination of the blood sample by Knott concentration was negative. In the patient’s history in terms of dirofilariosis significant trips abroad and contact with domestic animals not have been recorded. The weekends he spends in his summer cottage on the bank of Velence Lake where he has been exposed to frequent mosquitoes bites (9).

Conclusion

Visiting or living near riverbanks where mosquitoes are abundant appears to be a significant risk factor in contracting the infection. The veterinary reports complete and confirm our opinion that dirofilariosis is an emerging zoonosis in Hungary. The increasing number of diagnosed cases suggests that direct attention must be paid to this zoonosis, since its incidence may rise with the improvement of clinical diagnosis. Furthermore, the diagnosed immunodeficiency, presence of multiple *D. repens* and microfilariaemia propose the possibility of opportunistic nature of human dirofilariosis.

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Fig. 1. A thread-like worm under the conjunctiva in the temporal region of the left eyeball



Fig.2. Swelling of the left upper eyelid

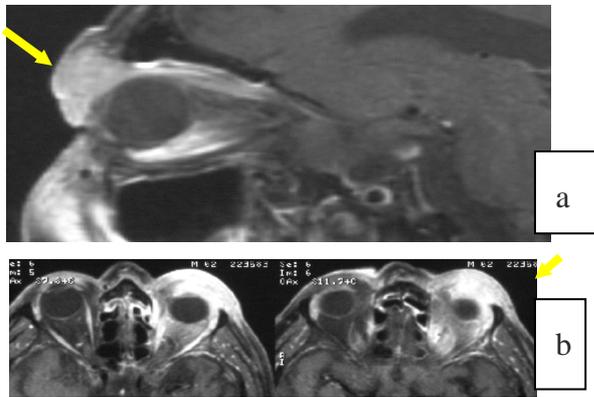


Fig. 3. Sagittal (a) and Axial (b) contrast MR recording



Fig. 3. Intact worm (a) and transverse section of *D. repens*: b. x 100 ; c. x 400 (HE)

4. INFEKCIJE OKA IZAZVANE NEMATODOM DIROFILARIA (NOCHTIELLA) REPENS

4. EYE INFECTIONS CAUSED BY THE NEMATODE DIROFILARIA (NOCHTIELLA) REPENS

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Eye infections caused by zoonotic helminths are increasingly discovering in the world. In our country, the most common cause of human dirofilariasis is the nematode *Dirofilaria repens*, and eye infections are the most common type of infestation by this parasite in Serbia. Infections have been described in patients from different parts of Serbia. Medico-social importance of dirofilariasis of the eye is the fact that the infection can cause severe eye damage, including blindness. Parasites, adults or immature larval forms can be localized in different structures of the eye, both external (eyelids, conjunctiva), and interior parts (ocular chamber, vitreous body, retina). Typical findings of ocular dirofilariasis is the presence of the single parasite in the lesion which is also described in our cases. Excluding subconjunctival infections that often, because of the transparency of tissue, can be diagnosed by "naked" eye, or cases where parasites were removed intact from the tissue, diagnosis of *D.repens* infection is usually performed by histopathologic examination. Periocular infections are usually manifested as a subcutaneous nodule of the eyelid (including granulomas of the conjunctiva) that contains the parasite, but the precise identification of parasites can be troublesome, usually because morphological characteristics of parasite have been disrupted due to parasite death and inflammation. In these ambiguous cases where it is necessary to differentiate similar species (*D.immitis*), the application of molecular technology can be of great importance, both on fresh samples and formalin fixed specimens.

5. DIROFILARIASIS IN R. MACEDONIA – AN OVERVIEW OF LITERATURE DATA AND OUR EXPERIENCE

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The zoonotic filariae, *Dirofilaria immitis* and *Dirofilaria (Nochtiella) repens*, have become increasingly recognized worldwide as accidental human pathogens.

The Republic of Macedonia meets all the criteria concerning risk factors for onset of dirofilariasis: climate characteristics, presence of certain vectors (*Aedes* and *Anopheles*), and presence of dirofilariasis in animal and human population in the neighboring countries. Furthermore, the study provided heartworm risk assessment maps for Europe and Balkan suggests that if the actual trend of temperature increase continues, filarial infection should spread into previously infection-free areas (Genchi C at all 2005). According to the climate scenario for RM, the most distinct changes are to be expected in the region with sub-Mediterranean climate (Bergant K. 2006).

If the maps for dirofilariasis prevalence are analyzed, it will be clear that data on the real condition of dirofilariasis in RM are scarce. It is a result of the asymptomatic human infestations, insufficient knowledge about this zoonosis by the medical doctors and/or inadequate documentation of positive cases.

Retrieving literature data we found only few articles concerning *Dirofilariasis* in R. Macedonia. The first data we encountered was reported by *Ježić and Simić in the year of 1929*. They recovered *D. immitis* from the heart of one of 111 dogs examined in Skopje. Unfortunately no study on animal reservoirs has been carried out until now. However, the colleagues from the Department for Pathology, Faculty of Veterinary Medicine, informed us that during a 5-year-period (2006-2011), *D. immitis* worms were found in the heart and/or pulmonary arteries of 12 dogs at autopsy.

Presence of 8 *Dirofilaria repens* positive cases from 38 examined professional dogs in the region of Skopje was reported in 2010 by Kocevski Z et al. They used a modified Knot concentration method, morphologic analysis and micrometric measurements for detection and identification of microfilaria species. Dogs were kept in separate cages in good hygienic conditions; however, high level of groundwater was present in the surrounding yielding ideal conditions for mosquito reproduction. Furthermore, the same author examined 40 dogs from the dog shelter center "Vardariste" for microfilaria. Five of them were positive for microfilaria. Unfortunately the species identification was not performed and, hence the results were not published.

One of the first cases of human dirofilariasis in R. Macedonia was diagnosed at the Institute of Microbiology and Parasitology, Skopje, and reported in 1969 as subcutaneous nodular dirofilariasis (Stefkov S. 1967).

During the period 2007-2011 we diagnosed two cases of *D. repens*. The first one was surgically extirpated from conjunctiva of a patient with ophthalmic filariasis. In 2007 a male patient from the village of Trubarevo (Skopje) visited his general physician presenting with pain and redness in his left eye. The treatment with local antibiotic failed and he was referred to the University Eye Disease Hospital in Skopje. A 13 cm long round worm was extirpated and it was sent for analysis to our laboratory (Cvetkovic D, 2007).

The second case of dirofilariasis was from a patient who claimed that something was moving under her skin for a 3 year-period. The patient was a 52 year old woman from the village of Gorobinci (Sv Nikole). The first skin lesion appeared on her lower leg. It was a single, erythematous nodule of about 3 cm in diameter. The nodule was slightly itching, painful, and remained for 2-3 days. In the period of 3 years the nodule disappeared and appeared again on different locations of the patient's body (her leg, trunk, arm, shoulder, neck, and eyelid) reaching her nose. At the end, a worm appeared spontaneously through the center of the nodule on the patient's nose. About 14 cm long worm was sent to our laboratory (Jurhar Pavlova M, 2011). With rare exceptions, in humans microfilaria production and microfilariaemia usually do not occur. (Sergiev VP, 2009) "Knot concentration method", was performed to exclude microfilaremia. The hemogram and the chest radiographs were negative for eosinophilic granulocytes and "coin lesions" respectively. The nodule and migration phenomena disappeared and no therapy was prescribed.

Nematodes were investigated macroscopically and microscopically on Litz Laborlux S microscope in Lucia M program and documented as *Dirofilaria repens*.

Another 4 cases with ophthalmic and 1 with subcutaneous filariasis surgically were treated but morphological details necessary for a correct documentation are lacking.

Since human infections are usually asymptomatic and the physicians and pathologists are not always familiar with dirofilariasis, the number of real cases of human infestation might be much higher than the reported cases.

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6. IS SERBIA ENDEMIC AREA FOR DIROFILARIOSIS IN DOGS?

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Dirofilarioses are parasitoses that can be transmitted by a mosquito (*Aedes*, *Anopheles* and *Culex*). These diseases are worldwidespread. However it is known for a long time that an average temperature of 20°C or higher, for at least one month period, characterizes the *Dirofilaria* endemic zones (1, 2, 3). In addition, these zones are rich in mosquito larval breeding sites, such as natural water bodies, man-made impoundments and soils subject to periodic flooding (4, 5, 6, 7).

Areas fulfilling the above climatic and environmental requisites are favourites candidates for targeted investigation on the presence and geographical distribution of *Dirofilaria immitis* (*D. immitis*) and *D. repens* within large and poorly surveyed areas. For this reason, our previous and first extensive survey on canine dirofilariosis agents in the Serbia was focused on the province of Vojvodina. Applying the parasitological methods we confirmed that Vojvodina is hyperendemic area for *D. repens* infection and endemic for *D. immitis* infection in dogs.

Circulating microfilariae of *D. repens*, *D. immitis* and *Acanthocheilonema reconditum* were found in 49.2%, 7.2%, 2.1% of dogs, respectively.

We extended our research about the prevalence of dirofilariosis in province of Vojvodina in one more region (the territory of the city of Pančevo) and in the territory of the city of Veliko Gradište (in the borderline between the Central Serbia and Vojvodina), using the parasitological and immunodiagnostic tests.

In 2009 canine filarioses were investigated in two northern areas of Serbia (Pančevo and Veliko Gradište) applying morphometry, biochemical staining, kit to detect *D. immitis* antigens, and 3 experimental ELISAs to detect antibodies to *D. repens* and *D. immitis* somatic/metabolic polyproteins, and to the recombinant *Wolbachia* Surface Protein (rWSP). Microfilariae, detected in 21/122 dogs (17.2%), were identified as *D. repens* (n=21) and *D. immitis* (n=2). *D. immitis* antigens were found in further 13 animals with occult infection; all the above 15 heartworm positive dogs had, in addition, antibodies to this parasite, which were detected in further 13 subjects, indicating an overall heartworm disease seroprevalence of 22.9%. Serology for *D. repens* evidenced antibodies in 42.6% of the dogs, but failed to recognize as positive 4 microfilaremic dogs. Serology against WSP proved positive in only 5.7% of the dogs. As for the two different areas, the prevalence of microfilariae and/or *D. immitis* antigens, mainly due to *D. repens* microfilaremic animals, was not-significantly higher in Veliko Gradište (33.3%) than in Pančevo (22%). However, serology evidenced a different epidemiological picture: heartworm infection occurred more often than it appeared in both areas, and antibodies to dirofilarial nematodes were detected in 72.9% of dogs living in Pančevo, therefore more than living in Veliko Gradište (57.1%).

The significant prevalence and seroprevalence of dirofilarioses in dogs suggests more widespread and detailed investigations. a constant monitoring of dogs is advisable to avoid further widespread of the natural foci as well as to control transmission levels to humans.

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7. IMUNOPATOGENEZA INFEKCIJA I POSTINFEKCIJSKIH SEKVELA IZAZVANIH *C. JEJUNI*

7. IMMUNOPATHOGENESIS OF INFECTION AND POSTINFECTIONAL SEQUELS CAUSED BY *C. JEJUNI*

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Thermophilic campylobacters (*Campylobacter jejuni*, *Campylobacter coli*, *Campylobacter lari* and *Campylobacter upsaliensis*) are the most frequent cause of enterocolitis at the present. *C. jejuni* predominates in this group. In some individuals *Campylobacter*, can entry bloodstream causing life-threatening infections. However, severe postinfectious sequels may occur, involving different systems: post infective polyneuropathy, Guillain-Barré Syndrome (GBS) and Miller Fisher Syndrome (MFS), as well as manifestations on musculoskeletal system (e.g. arthritis reactiva). Other possible consequences are inflammatory bowel disease (IBD) and immunoproliferative small intestinal disease (IPSID).

In campylobacter intestinal infections, adhesion factors (*Campylobacter* adhesion to fibronectin (CadF), fibronectin-like protein A (FlpA), *Campylobacter* adhesion protein A (CapA), Jejuni lipoprotein A (JlpA), periplasmic protein, Pei, Ellison, Blaser (PEB), Cj496c, Major outer membrane protein, (MOMP), Capsular polysaccharide (CPS), Lipooligosaccharide, (LOS)), invasiveness (*Campylobacter* invasive proteins (Cia) proteins), toxicity (Cytotoxic Distending Toxin - CDT) play significant role. *C. jejuni* can replicate intracellularly in macrophages, induce apoptosis, and activate intestinal epithelial NF- κ B. The surface protein JlpA interacts with epithelial Hsp90 promoting bacterial adhesion thus leading to NF- κ B and p38MAP kinase activation. The crucial mediators of IL-8 production are *C. jejuni* adhesion/invasion and the presence of CDT. IL-8 induction can be provided by ERK pathway, while ERK and p38 MAP kinases are involved in *C. jejuni*-mediated host responses. Pathogen associated molecular patterns (PAMPs) interact with Toll-like receptors (TLRs) and nucleotide oligomerization domain 1 (NOD1). Although *Campylobacter* can circumvent the activation of innate immunity via TLR5 and TLR9, innate immune mechanisms are essential for host defense. In addition, antimicrobial peptides, β -defensins, potentially contribute to enhanced bacterial clearing and self-limiting nature of disease.

In etiology of neurological post infectious sequels molecular mimicry between *C. jejuni* LOS and human gangliosides, has a paramount importance in genesis of cross-reactive antibodies and initialization of autoimmune response. Preceding *C. jejuni* infection is often caused by serotypes O:19, O:41, O:1, O:2, O:4, O:4 complex (4, 13, 16, 43, 50), O:5, O:10, O:16, O:23, O:37, O:44, O:64 O:35 and O:13/65. Miller Fisher syndrome (MFS) can be related to *C. jejuni* O:10 and O:2.

C. jejuni is also associated with post-infectious musculoskeletal manifestations: arthritis reactiva (ReA), sacroileitis, enteropathic spondylitis, and undifferentiated spondylitis. Several events participate in immunopathogenesis of musculoskeletal disorders: a long-term production of IgA directed towards bacterial agents; diminished reactivity of peripheral T lymphocytes to bacterial antigens from digestive tract; chronic stimulation in enteric lymphatic tissue provoked by bacterial antigens; survival of bacteria and its penetration into circulation enabled by weakened T cell defense. *C. jejuni* have been isolated from patients with

IBD such as Crohn's disease and in patients with an irritable bowel syndrome. *C. jejuni* enteric infection results in damage of the mucosal layer and disturbance in normal bacterial gut flora, which could lead to the disease. It is possible that bacterial toxicity play a leading role in disease etiology. In addition, it seems that *C. jejuni* can be associated with IPSID and it can be considered as a possible candidate responsible for immunoproliferative states.

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8. NEW INSIGHTS INTO STREPTOCOCCAL DISEASES

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Streptococci are major human and animal pathogens, divided into more than 60 species and groups whose taxonomy changed several times over the years. The earliest classification of streptococci was made by Shottmuller in 1903, and it was based on type of haemolysis. The β -hemolytic streptococci are further classified on the basis of a scheme developed by Rebecca Lancefield (1895-1981) that tests the serologic reactivity of carbohydrate antigens (C substance) derived from acid extraction of the bacterial cell walls. Recognized serogroups are given letter designations from A-H and K-V. Most group antigens are shared by multiple species. The most frequent isolates belong to group A streptococcus (*S.pyogenes*) and group B (*S.agalactiae*). Other streptococci with pathogenic potential are found within the β -hemolytic groups C, F and G (*S.equisimilis* or *S.anginosus*) but extremely rarely is disease associated with other Lancefield groups. In 1937, Sherman proposed a scheme for placing the streptococci into four categories. These categories were organized by hemolytic reaction, group carbohydrate antigens, and phenotypic tests. Sherman's four divisions were: the pyogenic division, the viridans division, the lactic division, and the enterococci. The pyogenic division included the beta-hemolytic strains with defined group antigen (A, B, C, E, F, and G). Sherman's viridans division included streptococcal species that were not beta-hemolytic and they lack a group specific antigen. This group is still known today as the viridans streptococci, and many more species have been added to this classification. Bergey et al. (1991) revealed five clusters of streptococci, determined by the partial 16S rRNA sequence. Kawamura expanded research and separated six phylogenetic groups: the pyogenic, the anginosus, the mitis, the salivarius, the bovis and the mutans groups. Facklam added a seventh group, the *S.anginosus* group.

Major human streptococcal pathogens belong to „pyogenic“ division of beta haemolytic streptococci and are classified as Lancefield groups A, B, C and G.

Streptococcus pyogenes (group A streptococci, GAS) is probably the most important species in this genera and is causative agent of common suppurative, superficial infections of mucosal surfaces and skin. The most common examples are pharyngitis, scarlet fever, impetigo, erysipelas, cellulitis, pyoderma. Serious postinfection immune sequelae, including rheumatic fever (RF) and acute glomerulonephritis, may also develop following repeated GAS exposure. Worldwide, GAS causes an estimated 700 million cases of mild, noninvasive infections each year, of which approximately 650,000 progress to severe invasive infections with an associated mortality of approximately 25%. Whereas antibiotic therapy is generally effective against non-invasive infections, severe invasive GAS infections are often more complicated to treat and may require aggressive supportive care and surgical intervention. Epidemics of scarlet fever and RF occurred in Europe and the United States before the early 1900s and were associated with high morbidity and mortality. However, the incidence of these and other severe GAS infections subsequently declined, a decline that was believed to be secondary to reduced expression of virulence factors in infecting strains. Over the last two decades, however, there has been an emergence of invasive and potentially life-threatening infections caused by highly virulent, epidemic strains of GAS that have cocirculated with less virulent endemic strains. Conditions such as necrotizing fasciitis (streptococcal gangrene or „flesh-eating disease“), myositis, and streptococcal toxic shock syndrome (STSS) have been

documented with increasing frequency during this period. These strains harbor an impressive arsenal of tissue-destructive and superantigenic virulence factors leading to the clinical manifestations of these severe diseases. Although many GAS serotypes are capable to cause severe diseases, a few were more frequently isolated from patients with severe cases (M1, M3, M18 and M28). Among these strains is a highly virulent subclone of serotype M1T1, which is commonly isolated from both invasive and noninvasive infection cases and most frequently associated with severe invasive diseases. This strain differs in its virulence and genomic content from other less virulent M1 strains. The major contribution to the emergence of this strain was acquisition of phages that introduced new genes encoding potent virulence factors. It is believed that the transition from localized into systemic infection by GAS serotype M1T1 is potentiated by spontaneous mutations within the genes encoding the CovRS control system, resulting in increase virulence factors synthesis, e.g. hyaluronic acid capsule, streptolysin O, DNase (streptodornase), superantigen toxins SpeA and SpeC.

Group B streptococci (*S.agalactiae*) was recognized in the early 1930s as an important cause of bovine mastitis, but did not recover from human sources. In the 1960s and 1970s, GBS emerged as a major cause of neonatal bacteriemia and septicemia. In children, GBS cause two major types of infections, early and late onset disease. Early onset diseases, which is more common than late, develops within first few days of life, is caused by direct vertical transmission from colonized birth canal and manifests as pneumonia and sepsis. Fatality can be as high as 50%. Following recommendation for prevention GBS infections, issued by CDC (Center for Diseases Control in the USA), the number of neonatal early onset diseases dramatically dropped. *S.agalactiae* can cause invasive diseases in adult non pregnant individuals. Surveillance data shows that on the contrary to decline in neonatal infections, number of adult infections, especially among older than 65 ys dramatically increased over past years. Most of these people have at least one underlying medical condition.

Groups C and G streptococci (GCS and GGS) are pathogens of animal origin, than can also cause human infections. The classification of group C and G has changed over past 40 years. Previously, there were four species in group C streptococci: *S.equisimilis*, *S.dysagalactiae*, *S.equi* and *S.zooepidermicus*. More recently, *S.equi* was subdivided into *S.equi* subsp *equi* (GCS) and *S.equi* subsp *zooepidemicus* (GCS) and *S.dysagalactiae* was subdivided into *S.dysagalactiae* subsp *dysagalactiae* (alpha hemolytic or nonhaemolytic large colony forming GCS) and *S.dysagalactiae* subsp *equisimilis* (all beta haemolytic large colony forming GCS/GGS and rarely group A or L). Until the 1970s only rare cases of GCS/GGS were described. These organisms can produce a number of tissue destructive enzymes and are responsible to cause a spectrum of human diseases almost identical to *S.pyogenes*, including conditions such as pharyngitis, epiglottitis, septicemia, meningitis and toxic shock syndrome. Underlying conditions are present in the majority of patients with invasive *S.dysagalactiae* subsp *equisimilis* infections. The overall incidence of invasive infections increased with age. Beside those large colony forming groups C and G streptococci, there are small colony forming groups C and G streptococci that refers to the *S.anginosus* (*milleri*) group. In the past the name *S.milleri* was first used to describe a nonhaemolytic *Streptococcus* species found in oral cavity. Over time other isolates with similar characteristics were discovered and these different groups were renamed under one species – *S.anginosus*. The *S.anginosus* group is composed of three species: *S.anginosus*, *S.intermedius* and *S.constellatus*, that demonstrate variable haemolysis patterns (alpha, beta, or gamma) on sheep blood agar. Colonies are typically small (colony size less than 0.5 mm). Members of *S.anginosus* group often exhibit Lancefield antigens A, C, F, or G or no group. They can reside commensally in the human oral cavity, but have certain propensity to to cause pharyngitis, bacteriemia and serious

purulent infections in the deep neck and soft tissue and in the intestinal organs such as brain, lung and liver.

Routine microbiologic diagnosis of streptococcal infections is often restricted to determination of the type of hemolysis and of the Lancefield group. Identification of streptococci to the species level is rarely carried out. This leaves a considerable risk for misidentification of causative pathogens, which can lead to an inappropriate treatment of the infection. As a further consequence of the complications associated with species determination, insight into the epidemiology of infections with certain streptococci remains imprecise, and the epidemiology of the anginosus group, in particular, remains widely elusive. However, recent studies has revealed that the burden of so-called nonA, nonB streptococcal (NABS) is comparable to that caused by invasive GAS infections. This phenomenon has led to a recognition that GCS and GGS are important and emerging pathogens.

After numerous taxonomic changes, viridans streptococci (VS) are today classified into five major groups: the *S.mutans* group, *S.salivarius* group, *S.anginosus* group, *S.mitis* group and *S.bovis* group. This is heterogeneous group of organisms that can be both commensal flora and pathogens in humans. In immunocompetent individuals VS very rarely cause diseases, but in certain patient populations, VS can cause invasive disease, such as endocarditis, intra-abdominal infection, and shock. Mortality is reported to occur in 6-30% neutropenic patients, suffered from viridans group streptococcus bacteremia. Within the VS, the rates and patterns of antimicrobial resistance vary greatly depending upon the species identification and the patient population. In general, *Streptococcus mitis* group organisms are resistant to more antimicrobial agents than the other VS species. Penicillin non-susceptible *S.pneumoniae* isolates (classified in *S.mitis* group) are a problem all over the world. In the 2011, the EARSS project reported a prevalence of penicillin non-susceptible and macrolide resistant *S.pneumoniae* 19,5% and 17,4%, respectively (<http://www.hpsc.ie/hpsc/AZ/MicrobiologyAntimicrobialResistance/EuropeanAntimicrobialResistanceSurveillanceSystemEARSS/EARSSSurveillanceReports/2011Reports/File,12962,en.pdf>).

In conclusion, we can say that classification of streptococci in clinical laboratories based on hemolytic reaction and/or Lancefield group is inadequate for accurate identification. Speciation and antimicrobial susceptibility testing are needed to provide sufficient information for clinical decision-making. Given the incidence of invasive streptococcal infection, the distinct clinical presentations and potential for increasing antibiotic resistance to antibiotics, speciation of this heterogeneous group of bacteria is important for optimal clinical management and to improve understanding of epidemiology.

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USMENA PREZENTACIJA ORAL PRESENTATION

9. IDENTIFIKACIJA *LACTOBACILLUS SPECIES* IZOLOVANIH IZ FECESA PREVREMENO ROĐENIH BEBA POMOĆU API 50 CHL SISTEMA

9. IDENTIFICATION OF *LACTOBACILLUS SPECIES* ISOLATED FROM PREMATURE BABIES' FAECES BY API 50 CHL SYSTEM

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The human intestinal tract is inhabited by different species of bacteria which modulate metabolic and immunologic processes thus having impact on health and diseases. Useful bacteria as bifidobacteria and lactobacilli take part in this modulation. Immature intestine motility and using large quantities of wide-spectrum antibiotics in premature babies lead to a delay in colonization or modified colonization in terms of smaller number of these bacterial species compared to full term babies.

The aim of this paper was identification of *Lactobacillus species* isolated from the faeces of premature babies that were fed differently. Material and methods: The investigation encompassed 61 prematurely born babies, between 30 and 36.6 weeks gestational age, body weight 1100-2100g, without congenital anomalies. The babies were included in the study when they started per os intake or when they achieved 80 ml/kg/day of enteral intake. The study was approved by the Ethics Committee and was conducted in the Gynecology and Obstetrics Clinic "Narodni Front" in the period from February 2007 to June 2008. According to the type of diet, the babies were divided into three groups: Group 1 = N^o 37 (MF=milk formula + *Lactobacillus rhamnosus* in Liobif ampoules, 2 x ½ a day during the study/ 28 days/). Group 2 = N^o 14 (MF=milk formula), Group 3= N^o 10 (MM=mother`s milk). Microbiological analysis of the faeces was carried out on the 1st, 5th, 7th, 11th, 14th, 17th, 21st, 24th and 28th day of the study. The first measuring day corresponds to the 9th day of babies` life. Homogenized faeces, dilutions of which were made, was inoculated on MRS agar (manufactured by Torlak), and then incubated aerobically and anaerobically at 37°C for 48h. *Lactobacillus species* were identified by API 50 CHL identification kit (BIOMerieux) on the 21st day of the study.

Results: In Group 1, lactic acid bacteria were isolated from 36 premature babies` faeces (97%) with *lactobacillus* identified in 28 babies` feces, at that: *L.rhamnosus* strain from Liobif ampoules in 21 babies` feces, *L.rhamnosus* (strain differing by sugar fermentation from the strain in the ampoule), *L.plantarum*, *L.brevis*, *L.acidophilus* and *L.curvatis* from 7 babies` feces in total. In Group 2, lactic acid bacteria were isolated from 12 babies` feces (86%), with *lactobacillus* strains identified in 9 babies` feces (*L.casei* and *L.acidophilus*). In Group 3, lactic acid bacteria were isolated from all 10 babies` feces (100%), with *lactobacillus* strains identified in 6 babies` feces (*L.brevis* *L. casei* and *L.helveticus*).

Conclusion: Premature babies` diet with mother`s milk has the most favourable influence on colonisation of the colon with probiotic bacteria. When breastfeeding is not possible, oral administration of clinically tested safe bacteria has been shown to be successful in colonisation of premature babies` colon with these useful bacteria. The administration of *Lactobacillus rhamnosus* (Liobif-Torlak) has resulted in the increased number of different *lactobacillus species* in the digestive tract of premature babies.

Key words: *Lactobacillus species*, premature babies, probiotics

10. KOMPARATIVNA ANALIZA *BORDETELLA PERTUSSIS*
VAKCINALNIH SOJEVA I CIRKULIŠUĆIH IZOLATA U SRBIJI
**10. COMPARATIVE ANALYSIS OF *BORDETELLA PERTUSSIS*
VACCINE STRAINS AND CIRCULATING ISOLATES IN SERBIA**

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In Serbia, whole cell pertussis vaccine was introduced in 1957. Current composition of the vaccine has been used since 1985 and contains four autochthonous strains of *Bordetella pertussis* isolated from 1957 to 1984. To monitor changes in *B.pertussis* population, 70 isolates collected from 1953 to 2000 were studied together with the vaccine strains. The methods included serotyping of fimbriae (Fim), genotyping of pertactin (prn) and pertussis toxin S1 subunit (ptxA) and PFGE analysis. Shift from ptxA2 to ptxA1 has been observed in isolates since the late of 1960s. All isolates from 1980 to 1984 harbored ptxA1. Re-appearance of the ptxA2 allele followed an addition of the two strains harboring ptxA1 in the vaccine in 1985. The allele prn1 was predominant among the Serbian isolates, though prn3 and prn11 have been detected since 1981 and 1984. The allele prn2 was found only in two strains isolated in 2000. Serotype Fim2.3 disappeared before 1980 and serotype Fim2 became predominant since then. The vaccine strains showed differences in ptxA and prn. The results of this present study indicate that the *B. pertussis* population in Serbia is different from other vaccinated populations and that this difference may be related to the vaccine used.

Keywords: pertactin, pertussis toxin, vaccine

11. *STREPTOCOCCUS ANGINOSUS* -UZROČNIK PERIAPIKALNIH APSCESA ZUBA GORNJE VILICE I GNOJNE UPALE SINUSA – PRIKAZ SLUČAJA

11. *STREPTOCOCCUS ANGINOSUS* –THE CAUSATIVE AGENT OF PURULENT DENTAL PERIAPICAL AND SINUSES INFECTION–THE CASE REPORT

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The goal of this report is to emphasize importance of *Streptococcus anginosus* – the causative agent of purulent infections. According to the literature data, *S.anginosus* is pathogenic species no matter the number of this microorganism is found in specimen. Despite that, this species is mostly categorised wrongly as saprophytic flora, because by taxonomic categorisation and by morphological characteristics it belongs to viridans streptococci. The patient have had chronic sinusitis with the dark green mephitic secretion. Despite that, all microbiological findings of her nose swabs were negative to presence of pathogenic microorganisms. Because patient have had strong pain which have spread on ear and frontal parts of her head, some more diagnostic procedures were done, including orthopantomogram which showed periapical abscesses on the teeth of right maxilla and purulent sinusitis. Patient was urgently processed to surgery. Before surgical intervention was done, deep swabs of her nose were taken for microbiological investigations. For the purpose of isolation and identification of microorganisms, conventional culture media and microbiological methods and BBL Crystal Gram positive ID kit (Becton Dickinson) were used. The growth of the microorganisms in aerobic conditions was poor, plates were almost sterile and no pathogenic microorganism were found. But after incubation in anaerobic conditions, great number of alfa haemolytic colonies were found, which later were identified as *S.anginosus*. There are no characteristic test for recognizing this species in routine microbiology practice. Latex agglutination test was positive for the group A, C, G and F. This is mostly anaerobic microorganism and it would stay undetected if cultivation of the swabs was done aerobically. Colonies are the very same as viridans streptococci which may laed to false report on saprophytic flora.

Conclusion: In all cases of purulent infections, viridans streptococci should not be considered as saprophytic flora untill *S.anginosus* is exluded. Swabs taken in the cases of purulent infections of tonsiles and of respiratory system, should pe properly cultivated in anaerobic conditions.

Key words: *Streptococcus anginosus*, Viridans streptococci, purulent infections

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POSTERI
POSTER PRESENTATION

12. RESPIRATORNE VIRUSNE INFEKCIJE KOD DECE
12. RESPIRATORY VIRUS INFECTIONS IN CHILDREN

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Over a five-year period, serological testing was done on 660 children with acute upper respiratory tract infections, 260 children with bronchitis, and 660 children with pneumonia.

The aim of this paper was to determine the role of viruses (parainfluenza virus, RS-virus, influenza virus A and B, and adenovirus) in the occurrence of respiratory infections in children. ELISA test was used in diagnostics to detect specific IgM and IgG class antibodies. Statistical significance was determined using the χ^2 (*chi-square*) test.

Viral etiology of acute upper respiratory tract infections was confirmed in 511 of the tested individuals (77.4%). The highest number of these infections (81.1%) was determined in school children. Adenovirus infections were confirmed in 34.2%, more common than parainfluenza virus (17.1%), RS-virus (11.8%) and influenza virus A and B (14.3%).

Viruses caused disease in 153 children with bronchitis (58.8%). Viral bronchitis was most frequently detected in school children (66.0%). Adenoviruses caused bronchitis in 32.7%, more common than parainfluenza virus (12.7%), RS-virus (11.5%) and influenza virus A and B (1.9%).

Viral etiology of pneumonia was confirmed in 314 patients (47.6%). The highest number of cases of viral pneumonia were detected in children under 3 years of age (65,1%) Adenoviruses were more frequently confirmed as a cause of pneumonia (in 26.7% of the tested children) than parainfluenza virus (5.6%), RS-virus (12.4%) and influenza virus A and B (2.9%).

Conclusion: Viruses are the most common causes of respiratory syndrome. Etiological diagnosis can be established solely by virological testing.

Keywords: Respiratory virus infections, clinical syndromes, diagnostics.

13. OBOLJENJA IZAZVANA CLOSTRIDIUM DIFFICILE KOD HOSPITALIZOVANIH BOLESNIKA - FAKTORI RIZIKA

13. DISEASES CAUSED BY CLOSTRIDIUM DIFFICILE IN HOSPITALIZED PATIENTS - RISK FACTORS

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Strains of *Clostridium difficile* are found in the intestine of healthy people with no symptoms (asymptomatic carriers / colonization), but in people with risk factors can cause diarrhea of varying severity to life-threatening pseudomembranous colitis (PMC).

Objective: To determine the risk factors leading to the emergence of disease caused by this bacterial species in hospitalized patients.

Materijals and methods: The survey was conducted at the Institute of Public Health in Nis, Center for Microbiology in a sample of 37 hospitalized patients with diarrhea caused by *Clostridium difficile* and 100 hospitalized patients in the control group. Statistical analysis was performed using SPSS software version 15th

Results: Univariate logistic regression as a significant risk factor for developing the disease were identified: age (OR = 1.03, 95% CI: 1.003 to 1.057, p = 0.027), antibiotic therapy (OR = 30.139, 95% CI: 7.874 to 115.361 and p = 0.0001), duration of antibiotic therapy (OR = 6.1, 95% CI: 1.6 to 23, p = 0.001), giving two or more antibiotics the treatment of infections (OR = 10.577, 95% CI: 2.642 to 42.338 p = 0.01) and number of days spent in hospital (OR = 1.547, 95% CI: 1.310 to 1.828, p = 0.001). Analyzed by univariate logistic regression factors were introduced in the multivariate model with adjustment for all parameters analyzed. As statistically significant risk factors for these diseases were identified: age (OR = 1.031, 95% CI: 0.984 to 1.080, p = 0.0199), antibiotic therapy (OR = 160.606, 95% CI: 7.349 to 3509.871 and p = 0.001), duration of antibiotic therapy (OR = 1.2, 95% CI: 1.0 to 1.4, p = 0.01) and number of days spent in hospital (OR = 1.144, 95% CI: 1.062 to 1.233 and p = 0.001). In addition to the tetracycline group of antibiotics and trimethoprim-sulfamethoxazole (p > 0.05) for all other antibiotic groups showed a statistically significant difference compared to the control group (p < 0.05).

Conclusion: Identifying risk factors for diseases caused by this bacterial species allow identification of high-risk groups of patients who could be conduct preventive measures for prevention of environmental occurrence of disease, more severe forms of disease and death.

Key words: *Clostridium difficile*, hospitalized patients, diarrhea, risk factors

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14. PRISUSTVO PSEUDOMONAS AERUGINOSA U INFEKCIJAMA RANA

14. PRESENCE PSEUDOMONAS AERUGINOSA IN WOUND INFECTIONS

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Introduction. *Pseudomonas aeruginosa* (*P. aeruginosa*) is one of the most common causes of wound infections. Mainly found in burns, chronic wounds, caused by poor blood circulation, high blood pressure and diabetes mellitus and postoperative wounds.

Objective: The goal was to determine the presence of *P. aeruginosa* wound cultures and susceptibility testing of isolates to antibiotics.

Methods: The study was conducted as a retrospective study. In the period from 2007 to 2011. ZC" Aleksinac" in Aleksinac is taken 1427 wound swabs, hospital swabs from 886 to 541 outpatient wound. Swabs were cultured on blood agar plates, endo agar plates, broth and glucose broth thioglycolate broth (Hi Media). *P. aeruginosa* was identified by conventional bacteriological methods. It was investigated the susceptibility to piperacillin, piperacillin-tazobactam, imipenem, ceftriaxone, cefotaxime, ceftazidime, cefepime, amikacin, gentamicin, netilmicin and ofloxacin, ciprofloxacin (Hi Media). Results: *P. aeruginosa* was cultured from 406 (28.45%), wound swabs, 225 hospitals and 181 outpatient. Outpatient isolates were sensitive to imipenem (91%), piperacillin-tazobactam (75%) and ceftazidime (62%). Hospital isolates were sensitive to imipenem 86.11%, 83.33% to piperacillin-tazobactam and ceftazidime 63.33%. During 2011 the first reported isolates that produced the metal β -lactamases.

Conclusion: *P. aeruginosa* was cultured from 406 (28.45%), wound swabs, 225 hospitals and 181 outpatient. The isolates were the most sensitive to imipenem, piperacillin-tazobactam and ceftazidim.

Key words: *Pseudomonas aeruginosa* wound infection, resistance and antibiotics

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15. PREVALENCA RESPIRATORNOG SINCICIJALNOG VIRUSA KOD DECE SA AKUTNOM INFEKCIJOM DONJEG RESPIRATORNOG TRAKTA

15. PREVALENCE OF RESPIRATORY SYNCYTIAL VIRUS IN CHILDREN WITH ACUTE LOWER RESPIRATORY TRACTINFECTION

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Institute of Public Health Nis

Introduction: Respiratory syncytial virus (RSV) is well recognized as the most important pathogen causing acute respiratory disease in infants and young children. Respiratory distress and respiratory failure are caused by RSV in some severe cases.

Objective: The aim of this study was to determine the prevalence of RSV infection in hospitalized children with acute lower respiratory tract infection.

Material and methods: The study group consisted of 120 children, aged up to 5 years, hospitalized for lower respiratory tract infection: 80 children under the age of 1 year and 40 children aged 1-5 years. Serological diagnosis of RSV infection was made by ELISA test for the detection of specific IgM, IgA, and IgG antibodies.

Results: In a group of 120 hospitalized children with acute lower respiratory tract infection in 19 (15.8%) anti-RSV IgM antibodies were detected: among them in 14 (17.5%) children under the age of 1 year and 5 (12.5%) children aged 1 - 5 years. In 12 (63.2%) children, in addition to anti-RSV IgM, and IgA were detected. All the children were anti-RSV IgG positive.

Conclusion: Our results suggest that RSV is an important cause of acute lower respiratory tract infection in young children. RSV is the most common cause of lower respiratory tract infection in infants up to 1 year.

Key words: Respiratory syncytial virus, children, lower respiratory tract

16. IZOLACIJA I IDENTIFIKACIJA TERMOFILNIH
KAMPILOBAKTERIJA I NJIHOVA POTVRDA NA BAX PCR SISTEMU U
GZZJZ BEOGRAD

**16. ISOLATION AND IDENTIFICATION OF THERMOPHILIC
CAMPYLOBACTERIA AND THEIR CONFIRMATION ON THE BAX
PCR SYSTEM USED IN INSTITUTE OF PUBLIC HEALTH OF
BELGRADE**

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Institute of Public Health of Belgrade

Introduction: *Campylobacter spp.* is causative agent of acute diarrhea syndrome. As such, it has a prominent role in humane pathology. The other species, *Campylobacter jejuni*, is most frequently seen pathogen bacterium isolated from food. Our determinations were performed between May 7 to 23, 2012. We examined 864 samples of the stool. *Campylobacter spp.* was isolated in 65 (7.5%) of them.

Aim: Confirmation and identification to the level of species of the isolated *Campylobacter spp.* using BAX PCR system.

Materials and Methods: We used standard microbiological procedures in isolation and identification of the *Campylobacter spp.* This means isolation on the solid selective medium, in micro- aerophilic conditions; microscopic evaluation and rapid oxidase test. Confirmation and identification to the species level was performed using BAX PCR, detection of a unique DNA of the fragment typical for the special, target microorganism.

Results: Out of the total number of positive isolates (n=65), the majority was identified as *Campylobacter jejuni* (n=61) and *Campylobacter coli* (n=4). In the two patients (n=2) we identified both *Campylobacter jejuni* and *Campylobacter coli*.

Conclusions: The results show dominance of *Campylobacter jejuni* in patient stool samples (diagnosis: diarrhea syndrome) in Belgrade. It corresponds to the results obtained in other parts of Serbia.

Key words: BAX PCR System- Diarrhea- Campylobacter Thermophilic species

**17. MRSA ZASTUPLJENOST U MATERIJALU LABORATORIJE ZA
BRISEVE I PIOKULTURE U PERIODU OD TRI GODINE
17. MRSA- PRESENCE IN THE MATERIAL EXAMINED IN
LABORATORY FOR SWABS AND PYOCULTURE IN THE THREE-
YEAR PERIOD**

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Institute of Public Health of Belgrade

Methicillin- resistant *Staphylococcus aureus* (MRSA) is the bacteria that have gained much attention because of rapid spread and hazards it has been posing. The paper presents the occurrence and presence of MRSA in our laboratory material. Institute of Public Health of Belgrade has the Laboratory for swabs and pyoculture. Between September 1, 2008 and August 31, 2011 we had examined 429, 665 swabs taken from the wounds, ear, eye, throat nose and skin. We used standard laboratory methods to isolate and identify *Staphylococcus*. We detected MRSA by examination of the sensitivity to penicillin and oxacillin. Based on such results we concluded that there had been sensitivity to all beta- lactams. Out of 429, 665 samples, we isolated 7, 541 (1.76%) of *Staphylococcus aureus*. Out of this number, 733 (9.72%) were MRSA. Our data comply with the data from relevant literature. It is necessary to carry out preventive in the case of MRSA, in both hospital and other settings.

Key Words: MRSA- Penicillin- Oxacillin

18. EMERGING LOWER RESPIRATORY INFECTIONS CAUSED BY *STENOTROPHOMONAS MALTOPHILIA* AMONG DEBILITATED PATIENTS WITH ENDOTRACHEAL TUBES OR CYSTIC FIBROSIS

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Stenotrophomonas maltophilia is considered an environmental bacterium, although little is known of its epidemiology. Even less is known of pathogenic mechanisms and virulence factors. This reflects over difficulties in distinguishing colonization from true infection, which has fostered the view that the bacterium is essentially non-pathogenic. In the last decade *S. maltophilia* has been documented as an important agent of nosocomial infections, mainly in debilitated individuals with mortality rate 26,7%. Many strains of the bacterium manifest resistance to multiple antibiotics.

This study is generally case report of unusual isolation of *Stenotrophomonas maltophilia* originated from medical devices (endotracheal tubes) used to support immunosuppressed surgical patients in KARIL as well as patient with CF and attempt to distinguish colonization from infection.

During our continuous monitoring procedure, we have isolated 26 multi-drug resistant strains of *Stenotrophomonas maltophilia* (100% resistance to cefixime, ceftriaxone, cefuroxime, cefotaxim, amoxicillin + clavulanic acid, imipenem). Automatic VITEK technique has been used for identification as well as for antibiotic susceptibility testing, to confirm traditional microbiological techniques (morphology of colonies on blood agar plates and negative oxidase test, disk-diffusion method and E-test). All patients suffered from traumatic hemorrhagic shock syndrome.

Clinical significance has been confirmed in 4 cases from intubated patients with clinical signs for lower respiratory infection (high body temperature 38,5C, and Ro confirmation). These patients have been treated with Klimicin and Lendacin with recovering period in 4 days. There were no clinical signs patient with cystic fibrosis.

Key words: *Stenotrophomonas maltophilia*, lower respiratory infections, clinical significance, endotracheal tube, CF

19. ANTIMICROBIAL SUSCEPTIBILITY OF GRAM-NEGATIVE BACILLI ISOLATED FROM PATIENTS WITH INTRA-ABDOMINAL AND URINARY INFECTIONS : 2011 RESULTS FROM SMART (STUDY FOR MONITORING ANTIMICROBIAL RESISTANCE TRENDS) IN NIŠ

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Introduction: The purpose of the Study for Monitoring Antimicrobial Resistance Trends (SMART) is to monitor the *in vitro* susceptibility of clinical bacterial isolates to antimicrobials in intra-abdominal and urinary infections worldwide. SMART monitors longitudinal susceptibility patterns (based on a bacterial population of MICs) among target organisms in the regions of Asia/the Pacific (A/P), Latin America (LA), Middle East/Africa (ME/A), North America (NA), and Europe (EU). SMART provides important information about changes in the spectrum of microbial pathogens and trends in the antimicrobial resistance patterns in nosocomial and community-acquired intra-abdominal infections.

Objectives: To monitor the *in vitro* susceptibility of gram-negative bacilli to antimicrobials in intra-abdominal and urinary infections, and to identify early changes in susceptibility patterns of community- or hospital-acquired organisms, including those that produce extended-spectrum beta-lactamases (ESBLs)

Materials and methods: In November - December 2011 clinical samples were collected from the Clinical Center Nis and processed at the Institute of Public Health of Nis - Center for Microbiology. 65 isolates of Gram-negative bacteria - 45 from urine and 21 intra-abdominal were collected. Isolation and identification were performed using standard bacteriological methods. All of the isolates were sent to the IHMA center for analysis of data from the SMART study, which determined the antimicrobial susceptibility by using a microdilution method.

Results: The most dominant strains in the intra-abdominal isolates were *E. coli*, *Proteus mirabilis* and *Pseudomonas aeruginosa*, and in the UTIs isolates were *E. coli*, *Klebsiella spp.* and *Proteus mirabilis*. ESBL + isolates were the most frequent in the *Klebsiella spp.* and *Proteus mirabilis*. Antimicrobial susceptibility of the intra-abdominal isolates was better than the susceptibility to the UTIs. Intra-abdominal isolates showed no resistance to carbapenems, and the highest resistance shown was to ampicillin - 55%, and only 5% and 6% to ciprofloxacin and gentamicin, respectively. Resistance to the UTIs isolates was higher to all tested antimicrobial drugs. The highest resistance was detected to ampicillin, gentamicin and ciprofloxacin - 78%, 64%, and 56%, respectively. These antimicrobial drugs are usually used for cases of urinary tract infections without complications. In the case of carbapenems, resistance was detected to all of them, but in small amounts - 2% to meropenem, 3% to imipenem, but almost 13% to ertapenem.

Conclusion: In 2011, for the first time, two major Serbian clinical centers - in Niš and Belgrade, became involved in monitoring global trends of bacterial resistance, which is of great importance because of the possibility of continuous monitoring of the level of resistance

in our area, as well as the possibilities of corrective measures to prevent further increase in bacterial resistance in our country.

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20. MIKROBIOLOŠKA ISPRAVNOST SLADOLEDA U PODGORICI 20. MICROBIOLOGICAL SAFETY OF ICE CREAM IN PODGORICA

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Ice cream, no matter how delicious and irresistible, can be potentially dangerous due to alimentary infections and intoxications. Due to inadequate hygiene during production, storage and handling is very susceptible to microbiological contamination. Microbiological failure is a trigger for a bacteria contaminated sample.

Aim: The scope and purpose of this study was to analyze the microbiological safety of ice cream in Podgorica on the start of the summer season, results are comparable to the results of the previous year.

Methodology: random samples of handmade production and factory-made ice cream, microbiological analysis of the Regulation on microbiological safety of food in trade FRY Official 26/93, 53/95 and 46/2002.

Results: In total we have analyzed 109 samples of ice cream, and compared with the same period last year, total of 15 samples failed to match regulations and in 10 samples it has been found increased number of microorganisms. Three samples were contaminated with coagulase positive Staphylococci, and other two with *Proteus vulgaris*. *Salmonella* spp. has not been found in any sample. Compared to last year's results, number of samples that do not match criteria has dropped.

Conclusion: Compliance with the principles of hygiene in production and distribution of ice cream is very important for ensuring the microbiological safety of ice cream.

Keywords: Ice cream, food microbiology, poisoning staphylococci

21. UČESALOST INFEKCIJE IZAZVANE ROTAVIRUSIMA KOD
PEDIJATRIJSKIH PACIJENATA MLADIH OD SEDAM GODINA
**21. INCIDENCE OF ROTAVIRUS INFECTION AMONG PEDIATRIC
PATIENTS YOUNGER THAN SEVEN YEARS OF AGE**

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Objectives: The aim of the present study was to determine the incidence of rotavirus infection in infants and children up to 7 years of age in the town Niš and its surrounding area over a two year study-period between January 2009 and December 2010 to permit assessment of annual and seasonal variation in disease burden.

Materials and methods: An enzyme-linked immunoassay (RIDASCREEN[®] Rotavirus; R-Biopharm AG, Darmstadt, Germany) was used to detect rotavirus in the stool samples of 1156 pediatric patients defined as having acute gastroenteritis.

Results: The overall incidence of rotavirus gastroenteritis (among all newborns through 7 years of age) was 5.97%. In hospitalized children (n=144; 12.46 %) with severe disease symptoms, rotaviral infection was diagnosed in 28 (19.44%). Of the 1012 (87.54%) community – acquired pediatric patients, 41 (4.05 %) tested positive for rotavirus. Rotaviral infection was diagnosed in 67.85 % (19/28) hospitalized infants (0-1 year) with gastroenteritis. Most rotavirus gastroenteritis occurred in children less than one year of age (32.15%). Most rotavirus gastroenteritis cases (48.57%) occurred between October-December.

Conclusion: Rotavirus is one of the main causes of seasonal peaks in pediatric hospitalizations among infants and young children in our population.

Key words: Rotavirus, gastroenteritis, children

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22. OSETLJIVOST KLINIČKIH IZOLATA ENTEROKOKA NA ANTIMIKROBNE LEKOVE

22. SUSCEPTIBILITY PATTERN OF CLINICAL ISOLATES OF ENTEROCOCCI

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Infections caused by enterococci are emerged problem in hospital wards. The enterococci are organisms that are intrinsically resistant to many antimicrobial agents. Because of this characteristic, therapeutic options are limited and often are based on susceptibility testing results.

The aim of this study was to investigate the distribution of enterococcal isolates in clinics of Clinical center of Nis and their antimicrobial susceptibility profile.

Data were collected over the period 1.1.2010-12.9.2012. A total 534 enterococcal isolates were collected from the skin and soft tissue, body fluids, respiratory tract, blood of patients hospitalized in Clinical Center of Nis. Identification of enterococci was based on a conventional biochemical tests and VITEK 2 system. Antimicrobial susceptibility testing by Kirby Bauer method was done according to CLSI standard.

The majority of enterococcal isolates (37,45%, 21,35%) were isolated from patients hospitalized in Clinic of surgery and Clinic for gynecology and obstetrics, respectively. Out of all enterococcal isolates 91% were identified as *E.faecalis*, 6,18% *E.faecium*, and 2,8% *Enterococcus sp.* All *E. faecalis* isolates were susceptible to vancomycin and teicoplanin. A high percentage of susceptibility was detected to ampicillin (73,25%). Susceptibility to erythromycin, rifampicin and ciprofloxacin were 40,17%, 48,85% and 43,84%, respectively. All glycopeptide resistant enterococci were identified as *E. faecium*. The highest percentage of susceptibility of *E. faecium* was detected to linezolid (100%). Susceptibility to chloramphenicol and doxycycline was 71,87% and 62,07% respectively.

Continued evaluation for antimicrobial susceptibility is required in order to allow development of therapeutic strategy in the local hospitals. Ampicillin is still effective in therapy of infections caused by *E.faecalis*. Chloramphenicol, doxycycline and linezolid were most active agents against vancomycin resistant isolates of *E.faecium*.

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**SESIJA EPIDEMIOLOGIJA
EPIDEMIOLOGY SESSION****TEMA: HOSPITALNE INFEKCIJE-AKTUELAN PROBLEM
TOPIC: HOSPITAL INFECTION-CURRENT PROBLEM****UVODNA PREDAVANJA
INTRODUCTORY PRESENTATIONS****1. IZAZOVI I OGRANIČENJA BOLNIČKE EPIDEMIOLOGIJE U SRBIJI
1. CHALLENGES AND LIMITATIONS IN HOSPITAL
EPIDEMIOLOGY IN SERBIA**

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Hospital epidemiology is a relatively young science that aimed at measuring the effect of preventive strategies for control of healthcare-associated infections (HCAI). The main roles of hospital epidemiology are to: identify risks, understand risks, and eliminate or minimize risks. Using the epidemiology of the outcome of infection, hospital epidemiology programs were among the earliest projects for the use of scientific methodology in the analysis and improvement in patient care.

Hospital epidemiology has several important limitations. There is still a large amount of imprecision and ambiguity in terminology. However, the Centers for Disease Control and prevention prepared the definitions of HCAI that are translated in Serbian language. These definitions are widely in use in our country. Infection control committee and infection control program for each hospital were recommended by law in 1997 in Serbia. Those legal obligations have been newly introduced into practice. In all hospitals, the doctors that are actively and directly involved in the hospital infection control committee are epidemiologists, infectious disease doctors, microbiologists, the director of the hospital etc. Unfortunately, only a small number of hospitals have an infection control team with an infection control nurse and epidemiologist. The epidemiologists and technicians from the regional institutes of public health are responsible for the surveillance of HCAI in many hospitals. It is expected that the new law defines the role and the composition of the infection control team in each hospital. The national surveillance system has been recently organized. A National Infection Control Committee was recently established. The committee is charged with defining the national plan for HCAI surveillance and prevention and implements the national infection control policy, in cooperation with infection control sector of the National Institute of Public Health. A first national prevalence study of HCAI conducted in 1998 in 24 hospitals was the first step in the organization of a national infection control system. The third national prevalence study was organized in 2010 in 60 acute care hospitals. Four years ago, Serbia became a member of WHO Global Patient Safety Program and has organised National program for hand hygiene. One of the unsolved problem is under-reporting of HCAI. The current law requires hospitals to report all HCAI to the regional institute of public health. This

is time-consuming effort and many hospitals have faced the greatest challenges in reporting and improving infections rate. Therefore, there is an urgent need to define priority in the mandatory reporting of HCAI.

Despite many limitations, the hospital epidemiology is rapidly growing in our country. This is supported by a large number of scientific papers in this field published in the international journals

2. VAKCINACIJA U PREVENCIJI BOLNIČKIH INFEKCIJA

2. VACCINATION IN PREVENTION OF HOSPITAL INFECTIONS

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People are at the center of the phenomenon of hospital infections as a major reservoir and source of microorganisms, as well as major carriers, particularly during treatment and as receptors / receivers of microorganisms, becoming a new reservoir of infection (Prevent.of hosp.-acq.inf, WHO, 2002).

The basic doctrinal legal and moral obligation is to protect patients from the risk of cross infection and protect health care workers from the risk of job (Decker MD, et al. Hospital Epidemiology and Infection Control 3rd ed.).

In the hospital environment, particularly in the departments, there is a high risk of contact with different biological agents. Risk of infection of communicable diseases among patients and medical staff is therefore subject to constant brige. Considered to be particularly effective use of vaccine as prophylaxis after exposure of patients or case, for example, to prevent outbreaks. So, immunization with Hep A, meningococcal , acellular pertussis vaccine, can be applied in the prevention of outbreaks of hospital infections and the Hep A vaccine may provide partial protection as post-exposure prophylaxis. Varicella vaccine can provide protection if given 72 hours after exposure, but not reliable due to incomplete immunity. Immunization hospital staff and patients at high risk recommended against rotavirus infection, VZV, influenza, RSV, particularly in highly vulnerable preterm infants, small children up to 2 years, children with heart and lung problems (for example- chronic the pulmonary disease including bronchopulmonary dysplasia).

The use of vaccines during pregnancy raises a number of concerns about the risk of transmission to the development of the primary fetus. Risk is theoretically. In modern medicine and science have confirmed that routine vaccines are generally safe during pregnancy against dipfterije, tetanus, influenza and hepatitis B vaccines and the other can be given with appropriate consultation and meningococcal, and when there is clear and irrefutable indication of the vulnerability and antirabies. Contraindicated vaccines against measles, mumps, rubella, chickenpox and tuberculosis (due to theoretical risk - transmission to the fetus). Live viral vaccines are generally contraindicated in expectant mother. Without whether live or inactive vaccines are used, vaccination of pregnant women should consider the risk-based vaccination opposite benefit of care in a particular situation (Center for Disease Control and Prevention).

Immunisation of premature infants is a particular problem because premature infants have a 2-10 times greater resistance to infection than children brought (pertussis, Hib, pneumonia, influenza) and their immune response is a function of chronological, not gestational age. Lower level and the presence of maternal antibodies less reduced suppressive effect on the immune response. Prematures were clinically stable at age 2 months and have the same immune response as well as children rated.

The actual number of workers in health care, who are exposed to potentially infectious material is unknown. Because of the stigma, ignorance and postexposure prophylaxis options,

it is believed that most of these exposures remain unreported, and the available data almost certainly underestimate the importance of preventive measures problems. One of these infection is immunization of health care workers. It is the most efficient, fastest, easiest and most economical metodu. Profession health workers is one of the highest-risk for developing infection. How possible further transmission of the infection and the health care worker to patient, therefore the education of sorts, and possible methods of transmission of infection prevention measures important . Thereby important is the assessment of work limitations or absence, which requires continuous monitoring and epidemiological risk assessment.

Post-exposure requirements and sources of infectious disease control and the application of methods discover potential transmission of diseases . Because is necessary to determine whether employees are exposed susceptible to infection, whether the vaccine were protected if the opportunities exist for a given diseases. On that epidemiological follow: determined that prophylaxis is available and is recommended to determine the exposure of employees are not a contraindication to the recommended prophylaxis, if employees have contraindications, identify alternatives and inform employees about the risk of disease transmission, risks and benefits of prophylaxis.

Diseases transmitted from blood by health care workers pose a particular risk and complex problem. Leading are: HIV, hepatitis B, hepatitis C, while the other is of great significance: hepatitis D, hepatitis G, hepatitis non-ABCDE, SEN, TT virus infection and other infections that be transferred putem. High parenteral exposure rate and low rate of application of protective measures carries a significant risk of professional diseases transmitted from blood acquired infections. Occupational risk of HBV infection (HBsAg +, HBeAg + - risk of clinically manifest disease 22-31%, the risk of HBV serological evidence of infection was 37-62%), HBsAg +, HBeAg-risk of clinically manifest disease 1-6% while the risk of HBV serological evidence of infection 23-37%). occupational risks for HCV infection(1.8% (0-7%) and occupational risk for HIV infection-percutaneous exposure to 0.3% and from 0.2 to 0.5%) with exposure to mucous membranes or 0.09%, from 0.006 to 0.05 % (WHO).

Immunizations, immunoprophylaxis, and how seroprophylaxis, are extremely important measures of prevention in health care workers who are occupationally exposed to infectious agents and diseases when they have knowledge of it, and even more so when this knowledge do not have.Do far as immunization against hepatitis B virus and influenza virus gave best results in health institutions where they systematically implemented and WHO recommendations to implement an organized and systematic in all health institutions. Vaccination as a condition of employment is practiced in a number of highly developed countries in the world, like for example a requirement for surgical specijalnost. However, this policy should immunisation be conducted for all employees regardless of employment status, including employees who are in direct contact with patients (such as nurses, technicians, those engaged in physical therapy, physicians, students) as well as workers without direct patient care responsibilities (eg security environment middle / outside workers, security) service workers on contract, emergency medicine personnel (drivers).

Immunization is the fastest, most efficient and most cost-effective measures to prevent morbidity and mortality from serious infectious diseases. Our country was among the first in Europe and the world in the 19 century accepted vaccination as the most effective form of prevention, and brought legal obligation to thereby initiate specific prophylaxis against infectious diseases. Serbia population is not only among the first in Europe and the world for the introduction of compulsory immunization as a method of protection against specific infectious diseases, but also a the first of which started its own production of vaccines.

3. ANTIMIKROBNA PROFILAKSA KAO MERA SPREČAVANJA BOLNIČKIH INFEKCIJA

3. ANTIMICROBIAL PROPHYLAXIS IN PREVENTION OF HOSPITAL INFECTIONS

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Hospital infections are emerging problem all over the world. The result of the struggle with opportunistic agents, the most frequent among hospitalized and immunocompromised patients, is unfavourable due to spread antibiotic resistance and limited therapeutic options. The problem of healthcare associated infections could be solved by implementation of preventive measures, multidisciplinary approach and support of equally clinicians epidemiologist, microbiologists and farmacologists.

The most frequently applied preventive measures in hospitals are general measures for contact and airborne transmittion and then for other rouths of transmittion of infectious agents. Specific preventive measures include immunoprophylaxis of stuff and patients against certain agenses and hemioprophylaxis such as antimicrobial prophylaxis (AMP) of surcical site infections.

Applying determined protocol on drug choice, timing and duration of antibiotic prophylaxis the aim of AMP is to contribute better postoperative outcome without infection and in the same time to avoid selective preasure of antibiotics and development of antimicrobial resistance.

USMENA PREDAVANJA
ORAL PRESENTATION

4. SATURN - EU FP7 PROJEKAT U SRBIJI 2010/2015

4. SATURN - EU FP7 PROJECT IN SERBIA 2010/2015

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Introduction: The problem of hospital infections represent serious problem for hospitals in most countries worldwide, as in 5-10% of hospitalized patients annually registers some of the infections acquired in hospital, usually as a result of non-compliance with the measures of control and prevention of nosocomial infections. Pathogens of nosocomial infections, particularly methicillin-resistant *Staphylococcus aureus*, Gram-negative bacteria, extended-spectrum beta-lactamase and vancomycin-resistant enterococci are the most frequently resistant to practically all tested antibiotics and do not leave great opportunities in the implementation of antibiotic therapy, which is a cause for deep concern of clinicians around the globe. In April 2009. European Commission for projects within the 7th Framework Programme (FP7) has approved implementation of the scientific research project SATURN - Impact of Specific Antibiotic Therapies on the Prevalence of Human Host Resistant Bacteria. The study includes 13 university hospitals from 11 European countries, combining researchers of different profiles such as clinicians, microbiologists, epidemiologists, pharmacologists, and infectious disease. According to schedule the project will be carried out within seven work packages (Work Package – WP), Clinical Center of Serbia are involved in WP4, WP5 and WP6.

Objective: The main objective of the SATURN is to investigate the impact of use of antibiotics on the growing incidence of nosocomial infections caused by multiresistant bacteria in order to prove the necessity of strict adherence to recommendations of antibiotic treatment and prevention and control of hospital infections.

Methods: WP 4 - Nosocomial Acquisition Study - to compare rates of acquisition of MRSA and extended spectrum beta-lactamases (ESBLs)-producing gram negative bacteria (*Escherichia coli*, *Klebsiella* species and *Proteus* species) between different treatments groups and to define the temporal relationship between the start of antibiotic therapy, the acquisition of new colonization in patients previously not colonized, and the development of a bacterial infection caused by the same strain isolated in a screening sample. WP 5 - AMR Carrier Study: In order to examine the effect of antibiotic on AMR amplification as well as the effects of various antibiotic agents on the amplification of resistance among already identified carriers of enteric ARB conducted an observational longitudinal prospective study in 4 hospitals in units with high prevalence of resistant organisms. The target antibiotic for this study include commonly use agents in the hospital setting including quinolones, cephalosporins, piperacillin/tazobactam, ertapenem, imipenem, metronidazole, clindamycin and aminoglycosides. The duration, the sequential order of treatment will be examined including the effects of surgical antibiotic prophylaxis as well as the effects of target antibiotic agents/classes on selection, enrichment, and spread of the target AMR organisms.

Results: The main expected results of WP4 study will be to promote better understanding of the impact of different antibiotics in selecting AMR in hospitalised patients previously free of ARB. This should lead to the design of specific infection control measures for preventing spread of ARB in hospitalised non-ICU patients. The results of the WP5 study will provide clinicians and hospital epidemiologists new data on the differences between various antibiotic agents in their propensity to amplify AMR and lead to dissemination of resistance genes among carriers of these strains.

These data will allow better decision making on antibiotic prescription to reduce AMR without compromising patients' outcomes.

Conclusion: The WP4 attempts to define the direct causality between antibiotic treatment, colonisation and subsequent infection in hospitalised patients free of AMR on admission. It is hypothesised that new acquisition of colonisation due to MRSA and ESBL-producing Gram-negative bacteria will differ according to the type of antibiotics used, combination, duration of therapy, patients' risk factors, length of hospitalisation and baseline colonisation pressure. The main hypothesis of the WP5 study is that various antibiotic agents differ in their effect on amplification of AMR in already identified AMR carriers. Secondary hypotheses are that amplification of AMR in the GI tract is associated with increased environmental contamination and risk of infection and that duration of treatment and PK/PD indices have an important role in the amplification of AMR.

Key words: epidemiology, nosocomial infections, antimicrobial resistance (AMR), antibiotic multiresistant organisms (AMRO)

5. EPIDEMIJE ZARAZNIH BOLESTI U STACIONARNIM ZDRAVSTVENIM USTANOVAMA I USTANOVAMA SOCIJALNE ZAŠTITE

5. OUTBREAKS OF COMMUNICABLE DISEASES IN HOSPITALS AND INSTITUTIONS OF SOCIAL CARE

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Objective: To present epidemiological characteristics of epidemic occurrence of infectious diseases in the health institutions and social welfare institutions in the territory of Nisava and Toplica Districts in the period 2002-2011.

Materials and methods: the descriptive epidemiological method. Source of data records - check out epidemics and annual reports of the Center for Disease Control and Prevention Results: During the period of 2002-2011 143,828 people were affected on the territory of Nisava and Toplica District with infectious diseases, of which 27,781 were affected in some of the 320 outbreaks. The health institutions and social welfare institutions recorded 28 outbreaks and 536 patients. One people died in the flu epidemic 2011. An epidemic belongs Toplica, while the other occurred in the municipality of Nis-20, Aleksinac -6 and Doljevac - 1 Most outbreaks were reported in 2011 - 6 and 2004 - 5 when the most people affected (202 resp. 103), while the 2006th there has not been any outbreaks. The largest number of outbreaks - 11 and 50% of all cases registered in the Special Psychiatric Hospital in Gornja Toponica. 46.23% of epidemics belongs to the group of intestinal diseases. 1/3 of an epidemic started in February and October. Males make up 55% of patients. The most common are ages 20-29 - 107 and age 40-49 – 106. The source of infection was found in 2 of the epidemic, and assumed in 6. In 42.86% route of infection is only contact.

Conclusion: In order to prevent and fight against the epidemic increase surveillance of nosocomial infections (NI), especially in the departments and units increased risk (neonatology, maternity hospitals, psychiatric hospitals, gerontology centers), to control microbial resistance to drugs and make national recommendations for the prevention of most BI registered.

Keywords: epidemic, nosocomial infections, hospitals, institutions of social care

6. EPIDEMIOLOŠKI NADZOR NAD BOLNIČKIM INFEKCIJAMA U OPŠTOJ BOLNICI U ŠAPCU U PERIODU OD 2007. GODINE DO 2011. GODINE

6. EPIDEMIOLOGICAL SURVEILLANCE OF HOSPITAL INFECTIONS IN THE GENERAL HOSPITAL IN SABAC IN THE PERIOD FROM 2007 TO 2011

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Hospital infections (HI) are a significant public health problem, due to their increasing the length of hospitalization, costs of treatment and the mortality in hospitalized patients. Every patient admitted to a hospital is at risk to contract a hospital infection. They represent a significant complication of treatment in health institutions and a major health problem in developed countries, and even much higher in developing countries and the countries with reduced resources, where surveillance has not, or has only recently, been established.

The objective of this study was to determine the frequency and localization of most Hospital infections in the selected departments of The General Hospital in Sabac. During the given period of time, all the patients hospitalized for over 48 hours were being monitored. Diagnosis of hospital infection was made according to well-known definitions. A daily epidemiological surveillance of patients was performed as well as an insight into existing records (medical records, temperature charts, laboratory analyses, microbiological tests etc...), and with the help of the doctors at the departments and the team for hospital infections.

The diagnosis of HI was made according to criteria of HI applied in this country. All registered hospital infections were classified, according to their anatomic localization, into respective groups. In order to collect information about the patients and HI, the epidemiological survey was used.

In total, 546 patients had 579 hospital infections. The incidence rate of patients with hospital infections ranged from 2.47% at the beginning of monitoring, to 0.47% in the year 2011. The incidence rate per 1,000 patients/days of hospitalization was from 0.40 in 2007, to 1.06 in 2011. Surgical site infections accounted for a total of 41.3%, urinary tract infections 27.3%, reproductive tract infections 12.4% and sepsis 4.1%. Our conclusion is that the height of the rates is similar to the rates in the hospitals that are just starting surveillance system over HI.

Keywords: hospital infections, epidemiological surveillance, urinary tract infections, surgical site infections, incidence rates

7. BOLNIČKE INFEKCIJE, ZNAČAJ, REZULTATI PETOGODIŠNJEG NADZORA

7. HOSPITAL INFECTIONS, SIGNIFICANCE, RESULT OF FIVE YEARS CONTROL

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Hospital infections (HI) are present in health care institutions around the world, associated with the provision of health services and with different frequency. Characteristic of many infections within health institutions is their endemic maintenance.

The aim of this work is to show the importance of HI/supervision, and the results of a five-year monitoring (2004.-2008.) in the high risk departments for the occurrence of HI in the general hospital in Vranje, determined with study of the incidence and conducting targeted epidemiologic surveillance (throughout the year).

Retrospective analysis of data obtained by epidemiological surveillance, we got relevant data to show trends, prevalence, frequency of HI and risk factors for appearance of HI in the high risk departments for the occurrence of HI in the general hospital in Vranje.

Five year of monitoring in the high risk departments, registered in total 297 patients with 325 determined HI. At urology department, recorded the highest average rate of patients with HI and rate of HI. According to the anatomical localization the largest number of registered HI belongs to the infection of surgical site (190 HI or 58.5%) .

In patients with HI, isolated 18 different bacterial pathogens for HI. The leading causes of HI during this period were Enterobacter, Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, Enterococcus, Citrobacter i Proteus mirabilis.

Surgical site infections during the five-year period of supervision show a decrease in the share structure of HI.

Health institution with a defined program/plan HI control activities, more directly and effectively influence to the frequency of HI and forms of their occurrence.

Keywords: Hospital infection, significance, supervision, control.

8. BOLNIČKE INFEKCIJE NA ODELJENJIMA ORTOPEDIJE I TRAUMATOLOGIJE

8. NOSOCOMIAL INFECTIONS IN THE DEPARTMENTS OF ORTHOPEDICS AND TRAUMATOLOGY

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Although it's been more than three decades since the introduction of organized surveillance of nosocomial infections, they are still current and represent a significant health problem in countries around the world and in our country.

Purpose: To investigate the frequency and characteristics of nosocomial infections in a medical institution in Belgrade, in the period septembar-December 2011. year.

Materials and Methods: A prospective study of the incidence of nosocomial infections were registered in patients hospitalized in the departments of orthopedics and traumatology at the "Banjica" (more than 48 hours), in the period September-December 2011. year. As data sources are located on the isolation of living pathogens in microbiology laboratory, medical records of patients (medical history, temperature charts) and data obtained from the medical staff. This study was conducted diskriptivni epidemiological method.

Results: Of 298 patients hospitalized during the implementation of the study in 20 (6.7%) is a proven hospital infection (BI). The incidence of patients with ranged from 2.2% to 17.9%, and the incidence of infection of 2.2% to 11.9% compared to 1000 hospital days. Of the total number of BI 45.0% were infections of the digestive system (caused by *Clostridium difficile*), 30.0% of surgical site infections and 25.0% of urinary tract infections. The most common causative agents are *Staphylococcus aureus* and *Pseudomonas* spp., Urinary tract infections *E. coli*, and *Proteus mirabilis*, and infections of the digestive tract by *Clostridium difficile*.

Conclusion: The results of our study on the frequency of BI and the most frequent causes of these infections in the departments of orthopedic surgery and trauma can contribute to better understanding of the problems of BI.

Keywords: Hospital infection, incidence, patients, cause, control

POSTER PREZENTACIJA
POSTER PRESENTATION

9. HOSPITALNE INFEKCIJE – PROBLEM U JAVNOM ZDRAVSTVU U R.
MAKEDONIJI

**9. HOSPITAL INFECTIONS - PROBLEM IN PUBLIC HEALTH IN
THE REPUBLIC OF MACEDONIA.**

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Aim: A purpose of this paper is to display control's dynamic and monitoring of hospital infections in the Republic of Macedonia.

Material and metod: Data are obtained on the basis of reports for hospital infections received from the Institute of Public Health - Skopje, related to all centers in the Republic of Macedonia for the period 2005-2009. It's made data retrospective analysis.

Results: Sterilization control is made with spores of *Bacillus subtilis* and chemical indicator for dry sterilization on many sterilizers in departments. For this purpose 1029 spores are used on *Bacillus subtilis*, in which over 90% of cases the sterilization is professionally done. 472 controls of air sediment are made in 2009. In 10 Centers of Public Health, 5334 materials are taken for microbiological analysis, where 465 samples (8.7%) are isolated pathogenic and conditionally pathogenic agents. Out of 465 isolated agents, in 237 samples (50.9%) pathogenic bacteria are isolated, and in 228 samples (49.1%) pathogenic bacteria are conditionally isolated.

Conclusion: It is necessary to develop an appropriate and unique doctrine and methodology for work produced at the level of Republic of Macedonia for activities and monitoring measures realization and prevention and suppression of hospital infections' occurrence.

Key words: hospital infections, problem, Republic of Macedonia.

10. INTRAHOSPITALNA EPIDEMIJA AKUTNOG GASTROENTERITISA IZAZVANOG NOROVIRUSOM

10. INTRA-HOSPITAL OUTBREAK OF NOROVIRUS ACUTE GASTROENTERITIS

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Introduction. Norovirus outbreaks are frequently associated with semi-closed or closed institutions such as hospitals and homes for the elderly. In temperate climates norovirus infections are highly seasonal, peaking during the winter, and this seasonality is especially marked in healthcare settings.

The aim of paper was to show confirmed norovirus intra-hospital outbreak in one of the Military Medical Academy Clinics and taken control measures.

Method. Research was performed with the active epidemiological investigation, and data from patients were collected by an interview. Stool samples were tested by standard microbiological methods for bacteria and by RIDA Quick test for norovirus.

Results. The first case of acute gastroenteritis was reported on February 10, and last on February 21, in 2010. A total of 23 individuals were affected (18 patients and 5 health professionals from the clinic). The patients developed the following clinical manifestations: diarrhoea in 91.3% of patients, vomiting in 56.5% of patients and temperature over 37 ° C in 30.4% of patients. In stool samples were not detected pathogenic intestinal bacteria. RIDA Quick test detected norovirus in stool samples of patients. The results of epidemiological studies have pointed to the contact way of infectious agent transmission. In order to suppress the epidemic, following preventive measures were taken: thorough cleaning and disinfection of facilities and increased use of personal hygiene among staff and patients - washing and disinfecting hands. The taken measures have prevented the epidemic spreading to other clinics located in the same building.

Conclusion. Early identification of nosocomial outbreaks of acute gastroenteritis norovirusnog is of great importance for the implementation of effective counter-measures to prevent its spread.

Key words: Nosocomial Infection, Outbreak, Norovirus

SESIJA EPIDEMIOLOGIJA EPIDEMIOLOGY SESSION

TEMA: EPIDEMIOLOGIJA MASOVNIH NEZARAZNIH BOLESTI
TOPIC: EPIDEMIOLOGY OF NON-INFECTIOUS MASS DISEASES

UVODNO PREDAVANJE INTRODUCTORY PRESENTATION

1. EPIDEMIOLOGIJA MASOVNIH NEZARAZNIH BOLESTI 1. EPIDEMIOLOGY OF CHRONIC NON-COMMUNICABLE DISEASES

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Chronic non-communicable diseases (CND) are responsible for two-thirds (36 million) of deaths in the world, with 80% of them (29 million) occurred in low and middle income countries. Cardiovascular diseases, malignant neoplasms, chronic respiratory diseases and diabetes mellitus account for 80% of deaths and all have in the etiology the four leading risk factors: smoking, unhealthy diet, physical inactivity and hypertension.

Out of the six regions of the World Health Organization, Europe's most affected by the CND: cardiovascular disease, malignant neoplasm, diabetes mellitus, chronic respiratory diseases and mental disorders comprise 86% of deaths and 77% of premature death in the region. It is well known fact, from the experience of developed countries that the CND are among the leading group of preventable diseases in relation to overall morbidity, mortality and disability. Socio-economic factors, living conditions and lifestyles, rapid urbanization and population aging, are the determinants of the health in general, and in the context of the CND. Because of that CND and risk factors that preceded them, are the *circulus viciosus* in relation to the socio-economic development of society and the possibility of public health action.

According to the data of the Statistical Office of the Republic of Serbia in 2010, the leading cause of death were cardiovascular diseases with 55%, followed by the malignant neoplasms (21%) and injuries (3.3%). The leading three groups of diseases accounted for 80% of all causes of death of the Serbian population. Compared with European countries, Serbia is in tenth place in relation to the standardized mortality rates from cardiovascular and cerebrovascular diseases, the fourth in relation to diabetes mellitus, the third in relation to malignant neoplasms. In relation to the rate of incidence and mortality of lung cancer in male population, Serbia is ranked fourth in the world and third in Europe; in relation to the incidence of cervical cancer Serbia is ranked fifth, and in relation to the mortality ranked second in Europe. CND and their risk factors in our country are a major public health problem.

Recognizing those problems United Nations General Assembly adopted in 2011 political declaration on the prevention and control of the CND, which contains norms, standards and guidelines to assist States in the implementation of programs aimed at solving the problem of CND.

2. FAKTORI RIZIKA ODGOVORNI ZA NASTANAK KARCINOMA GRLIĆA MATERICE-ŠTA ŽENE ZNAJU O TOME?

2. RISK FACTORS ACCOUNT FOR THE OCCURRENCE OF CERVICAL CANCER – WHAT DO WOMEN KNOW ABOUT IT?

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Cervix uteri carcinoma is one of the leading diseases and causes of death from malignant diseases in Serbia, i.e. Vojvodina. The aim of this paper is to establish the women's positions and the degree of their knowledge on impact of certain risk factors to occurrence of malignant cervix uteri tumors. The positions were examined in three observed periods in women with cervix uteri carcinoma, women who attended the systematic examination and the group of students. The results confirmed that all three groups of interviewed women recognize the infectious factor as the main risk factor, while they do not differentiate among certain specific infectious agents. During these three periods of interviewing, an increase of percentage of women who state that the HPV was a concrete cause was observed. In 2006, it was 2.86%, in 2009, 7.15% and in 2010, it was 10.55%. The number of sexual partners, in all three observed periods, occurs within five leading risk factors only in students. The patients make most accurate prognosis in relation to survival of early detected disease, the percentages being 78.60% in 2006, 67.10% in 2009 and 58.30% in 2010, but with tendency of reduction. The media are a dominant source of information in all the interviewed groups. A trend of increase of the internet role in informing is registered. The students believe to be the least informed (each fourth). The groups of students and women from the systematic examination more regularly visit the gynecologists when compared to the group of patients. The conclusions of this paper show the necessity of broader general social action taken for improving of the level of knowledge on the given subject. Education should be a part of integrated programs of prevention of sexually transmittable diseases, sexuality, screening program and HPV vaccination, without any negative accompanying psychological contents.

USMENA PREDAVANJA ORAL PRESENTATIONS

3. MALIGNNE BOLESTI U SEVERNOM DELU KOSOVSKO-MITROVAČKOG OKRUGA 3. MALIGNANT DISEASE IN NORTHERN KOSOVSKA MITROVICA DISTRICT

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The main objective of this study is to identify the main epidemiological characteristics of malignant disease in the municipalities of the northern Kosovska Mitrovica district.

A cross sectional study was chosen as appropriate to achieve the aims of the study.

As Published data from the Register of chronic noninfectious diseases of the Public Health Institute of Pristina, situated in Kosovska Mitrovica were used for study design, data analysis and conclusions drawn from the study.

In the period 2004-2011. In Kosovo and Metohija (Serbian enclave) reported 907 cases of malignant disease. There are predominance of male patient in the study 542 (60%). The disease was registered in 14 villages. The largest number of patients (134), and unstandardized highest incidence rate (85.6 / 100,000) registered in 2007. year. Most patients (83%) belonged to age groups of 50 or more years. The linear trend of non-standardized incidence rates showed no statistically significant increase or decrease.

During the monitoring period (data on deaths for 2004, and 2005.), from malignant disease died 673 persons (390 men and 283 women).

Of the total 907 patients, 62.4% or 570 patients were residents of the municipality of northern Kosovska Mitrovica district (Kosovska Mitrovica, Laposavic, Zubin Potok and Zvecan)

The structure of patients with malignant disease to the localization of the Kosovska Mitrovica district municipalities in the first place Laposavić with 35.6%, followed by 30.7% of Kosovska Mitrovica, Zubin Potok and Zvecan 20.0% to 13.7% of patients.

Hi unstandardized incidence rate (150.8 / 100,000 population) was registered in the municipality of Kosovska Mitrovica 2006th year.

The largest number of male patients (125), was registered in Laposavić, while in Kosovska Mitrovica reported the largest number of female patients (83).

Leading localization of malignant tumors in men are lung and bronchus, followed by larynx cancer and colorectal cancer and in women with breast cancer, lung cancer and lung, cervical and colorectal cancer.

Leading localization of deaths from malignant tumors in men are lung and bronchus cancer, gastric cancer and colorectal cancer, and in women with breast cancer, lung cancer and lung and colorectal cancer.

In order to complete consideration of the importance and prevention of malignant diseases, it is necessary to consolidate the data for the entire territory of Kosovo, organized screening programs for early detection of malignant diseases as well as more updated submission of relevant data the Department of Public Health, especially on dead people.

Key words: malignant disease, the Serbian enclaves, Kosovo and Metohija.

4. EPIDEMIOLOŠKE KARAKTERISTIKE MALIGNIH TUMORA
MOKRAĆNE BEŠIKE U SREMU U PERIODU 2006-2011 GODINE
**4. EPIDEMIOLOGIC CHARACTERISTICS OF MALIGNANT TUMORS
OF THE BLADDER IN THE SREM REGION IN THE PERIOD 2006-
2011**

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Introduction: Incidence, prevalence and mortality rates of bladder cancers are increasing worldwide especially among males. Bladder cancer is increasingly important health problem in Vojvodina province.

The aim of study was to analyze epidemiological characteristics and trends of the bladder cancer in the Srem county in the period 2006.-2011.

Material and method: In this study we used a descriptive epidemiological method . Data on incidence and mortality were collected and analyzed from the Cancer Registry of Srem county.

Results: We analyzed data which indicated a rise in the incidence (Figure 1) and the decrease in mortality of bladder cancers in the Srem county in the period 2006.-2011. (Figure 2). The highest incidence and mortality rates of bladder cancer were registered in the municipality of Šid. During the observed period in the Srem county, incidence and mortality rates of bladder cancer were four times higher among males.

Conclusion: The rising trend in patients with bladder cancer can be explained by greater exposure to risk factors (smoking) and various cancerogens during observed period. Decline in mortality from bladder cancer was a false view of the trend because of dynamics in entering data into the Cancer Registry, which was most intensive in the period 2006-2007. Due to irregular and insufficient reporting, the obtained data should be interpreted with caution.

Key words: bladder cancer, incidence, mortality, Srem county

5. OPORTUNI SKRINING KARCINOMA GRLIĆA MATERICE U KBC ZEMUN

5. OPPORTUNISTIC SCREENING FOR CERVICAL CANCER IN CLINICAL CENTER ZEMUN

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Cervical cancer is the second most common cancer in women. Annually, approximately 500,000 women are diagnosed, and 250,000 of them die from cervical cancer worldwide. Organized presymptomatic detection of cancer - screening is not yet implemented in Serbia. Screening test should be simple, acceptable, painless, safe, inexpensive with high sensitivity, specificity and positive predictive value. In Serbia, opportunistic screening that included all women who willingly and on their own initiative come to the gynecologist was performed. The aim of the study was to determine the incidence of positive findings in opportunistic screening. Study has been conducted in 12,547 women, divided into six age groups, in period from 01.01.1998. till 31.12.2010., using cytodiagnostic analysis (Pap smear) and colposcopy with Schiller's probe. Of the total number of samples, 8.1% were Pap positive. The most frequent positive finding was PA III (91%), while the most frequent colposcopic findings were AW epithelium (26%). Regarding the age distribution of patients with positive findings, the highest incidence was in the group of 40-49 years (40%). Histopathologic confirmation of the diagnosis was variable in different years of study, ranging from 58-94%, with a trend of increasing accuracy, indicating the importance of education and training of gynecologists-cytologist

Keywords: cervical carcinoma, screening, Pap smear

6. NASLEDNA PREDISPOZICIJA I AKUTNI INFARKT MIOKARDA 6. HEREDITARY PREDISPOSITION AND ACUTE MYOCARDIAL INFARCTION

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Myocardial infarction (MI) is complex disease that begins with lifelong interaction between genetics and environmental factors. The aim of this study was to identify hereditary predisposition as risk factor for myocardial infarction in examined population in the city of Niš.

We used a case-control study with 100 patients with a first MI and 100 controls, matched with respect to sex and age (± 2 years) from the city of Niš.

Data was obtained through the epidemiological questionnaire. The Yates χ^2 test, odds ratio-OR and their 99% interval of confidence were used as statistical procedures.

The results showed that statistical significance for MI was among all three degrees of relatives of persons who have had an acute MI, and for hypertension, hypercholesterolemia and stroke among first and second - degree relatives. The persons with family history of hypercholesterolemia have had 12.43 times higher risk for disease ($p=0,000$) and family history with an MI at younger than 55 years risk was higher almost 10 times ($p=0,000$). Almost 4 times higher risk for disease have had persons with family history of hypertension ($p<0,00001$) and stroke (at younger than 65 years) - ($p<00005$); double higher risk with diagnoses of diabetes ($p<0,05$) and diseased who had relatives (at younger than 55 years) with other cardiovascular diseases (unless hypertension) ($p<0,01$).

We concluded that hereditary predisposition of diseases on sample of Niš city inhabitants was very important risk factor, mostly in the first-degree relatives. Genetic epidemiology is the future for all investigations between different population, especially for examination and findings differ genes and locus who are very important for myocardial infarction that would allow a new approach for preventive medicine.

Key words: hereditary predisposition, risk factor, acute myocardial infarction

7. OBOLEVANJE I UMIRANJE ŽENA OD AKUTNOG KORONARNOG SINDROMA U NIŠAVSKOM OKRUGU

7. WOMEN MORBIDITY AND MORTALITY OF ACUTE CORONARY SYNDROME IN NISHAVA DISTRICT

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Introduction: Acute coronary syndrome is a leading cause of premature morbidity and mortality in women worldwide as well as in Serbia.

The objective of the paper was to show the main epidemiological characteristics of morbidity and mortality among women with acute coronary syndrome in Nishava District. The observed period was 2006-2009.

Material and methods: Data were obtained from the national population register of acute coronary syndrome. The descriptive epidemiological method was used.

Results: A total number of 2012 new diagnosed women were registered. The average annual incidence rate was 1037,24. The specific age incidence rate ranged from 8,02 up to 5 425,4/100 000. A total number of registered dead women was 478 were younger than 65 years of age and... were older. Age specific mortality rates ranged from.... up to...Dieing was registered after the 35th years of age, and it is continually increasing with age. The average crude mortality rate was 246,2.

Conclusion: The acute coronary syndrome is registered in women in the age of 25 years. Sudden increasing of incidence rates is registered after the 55 years of age and the highest incidence and mortality rates were registered in the women older than 75 years. The increasement bouth of incidence and mortality rate may be attributed to the increasement of the risk factors in women.

Key words: acute coronary syndrome, incidence, mortality

8. PRIKAZ POKAZATELJA MENTALNIH POREMEĆAJA U MARIBORSKOJ REGIJI

8. SURVEILLANCE OF MENTAL DISORDERS IN THE MARIBOR REGION

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Objectives: Our aim was to assess the situation regarding to mental and behavioural disorders in the Maribor region (City of Maribor plus the municipalities of Ptuj, Slovenska Bistrica, Ormož and Lenart), notify the level of some general indicators referred to them and suggest solutions to ameliorate this field.

Methods: As part of the annual report on health statistics within the department of Social Medicine at the Institute of Public Health of Maribor, we collected and analyzed data as an approach to surveillance the current situation.

Results: During the year 2009 in the Maribor region the index of inability for work due to mental and behavioural disorders (block F00-F99) took up the 10th place among all the others chapters of ICD-10. Number of calendar days lost due to mental and behavioural disorders took up a very high 5th place while hospitalized people for the same reason were up to 1982. In addition, 32 people have died indirectly because of mental disorders, all due to alcohol dependency syndrome.

82 people committed suicide, a number that still shows, that the Maribor region is ranked a lot higher above than the Slovenian average.

Conclusions: The issue of mental disorders in the Maribor region is very much present despite the improvement of some indicators compared to previous years. The fact, that this particular database includes only institutionalized patients, suggests that the number of people having mental disorders is much greater. Community psychiatry as a region-based model could help developing methods and tools to the appropriate direction.

Key words: mental disorders, Maribor region, statistical surveillance, suicides, community psychiatry

POSTER PREZENTACIJA
POSTER PRESENTATION

9. ZANIMANJE I CARCINOM LARINKSA: REZULTATI CASE-CONTROL
STUDIJE
**9. OCCUPATION AND LARYNGEAL CANCER: CASE-CONTROL
STUDY RESULTS**

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Skopje, Republic of Macedonia

The **objective** of this study is to perceive the eventual causal associations among professional exposition and occurrence of laryngeal cancer (LarC).

Material and methods: The investigation has been made as a case-control study. It studies 185 patients with LarC and identical number of individuals without malignant disease (control group). Increased risk of the occurrence of this disease has been calculated with the Odds ratio (OR), while statistical significance of the investigated variables as risk factor is defined with the Confidence intervals (CI).

Results: In the group of persons with LarC, professional exposure was present in 145 individuals (78.4%). The greatest part of them was exposed on established (66.2%), and the others (33.8%), on probable carcinogenic agents. The exposed persons had 1.78 (95%CI, 1.12<OR<2.84), times significantly greater risk to become ill, compared to the non-exposed ones. Greater frequency of the disease was registered in: transport workers (present in 24.8% from the total exposed), farmers (20.7%), and constructors (17.9%). Transport workers had 6.86 (95%CI, 2.89<OR<16.28), times significantly greater risk to become ill in relation to non-exposed.

Conclusion: Prevention of LarC means several activities: complete elimination of the agents present at the working place, decrease of its concentration as well as the decrease of the exposition to the agent.

Key words: laryngeal cancer, occupation, professional exposition.

10. MORBIDITET OD ISHEMICNE BOLESTI SRCA U GOSTIVARSKOM REGIONU

10. MORBIDITY FROM ISCHEMIC HEART DISEASES IN THE REGION OF GOSTIVAR

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Aim: The aim of this work is to analyse the morbidity from ischemic heart diseases (IHD) in the region of Gostivar and in the period between 1997-2011.

Material and method: A descriptive analytic and epidemiological method of work is applied. As a source of information, morbidity statistics was used, from hospital-statistic lists (Form 3.21.60A) the rates were calculated on 10000 citizens, according to the census of the citizenship from the year 2002.

Results: In the period of observation a total of 3463 cases of hospital treated patients from IHD were registered (from which 2129 men and 1334 women). The annual rate of morbidity (Mb) was 22.71 (25.08 in men and 18.48 in women). Men have two times more diseases of IHD than women. It is determined by testing that the difference between the two has reached the level of statistical significance. In the region of Gostivar, the participation of the patients ill from IHD in the structure of the general Mb shows average rate of 5,19% with the tendency of growth. In the ranking of the diseases in the structure of IHD the highest average rate of morbidity is registered in the diagnosis: I25- Chronic ischemic heart disease (32.11), I21- Acute myocardial infarct (24.57), and is frequent in men than in women. With the analysis of the increasing Mb rate, a significant dependency of the age is noticed, thus with the increasing of the age Mb increases too. The maximal values of Mb noted by age are: 65-74 (143.36), 55-64 (61.34), and with persons older than 75 (87.86).

Conclusion: In the conclusion we can point out that in the next period we can expect also a high representation of IHD in the morbidity of the citizens of Gostivar. A significant decrease of Mb from IHD can be possible with the reduction of the risk factors through organized programmes were the whole social community will participate.

Key words: ischemic heart diseases, morbidity, the region of Gostivar.

11. EPIDEMIOLOGIJA SUICIDA U VOJVODINI 11. EPIDEMIOLOGY OF SUICIDE IN VOJVODINA

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Introduction: Every year almost one million people worldwide die from suicide. WHO estimates that by year 2020 the number will increase to 1.5 million. The general mortality rate is 16 per 100,000 or one suicide every 40 seconds.

Aim: Determine epidemiological characteristics of suicide in Vojvodina from year 1990 to 2010.

Materials and methods: This paper uses data obtained from the Statistical Institute Serbia, for executed suicides in AP Vojvodina.

Results: From year 1990 until the end of 2010 on the territory of AP Vojvodina has 11 661 registered suicides (8299 males and 3362 females). The average annual rate is 27.7 / 100 000. The trend during this period indicates that the highest rates of suicide were recorded in 1992 and 1993 (33.7 / 100.000, 34,5 / 100,000) and 1999 (31.5 / 100,000). The most common method of suicide for men was hanging (70%), and fire weapons (15%), and in women by hanging (69%) and poisoning (12%).

Conclusion: Vojvodina with rates above 20/100 000, within the framework of Serbia and former Yugoslavia, is an area of high mortality due to suicide. The reduction in suicides and other forms of suicidal behavior, it is possible to act on prevention, which showed positive results in many European countries.

Key words: Injuries, epidemiology, suicide, prevention

12. ZASTUPLJENOST KARDIOMETABOLIČKIH FAKTORA RIZIKA U VOJNOJ POPULACIJI

12. PRESENCE OF CARDIOMETABOLIC RISK FACTORS IN A MILITARY POPULATION

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The aim of the paper is to present the most common cardiometabolic risk factors in a military population.

Methods. At regular medical examinations of the professional members of the Army of Serbia, during the year 2011, were measured the levels of blood pressure, height, weight and body mass index (BMI) were determined. Laboratory examination of blood were determined levels of cholesterol, triglycerides and blood glucose. The data about the presence of psychological stress were collected by questionnaire.

Results. During 2011, at regular medical examinations were examined a total of 2203 people, of which 76 persons under the age of 30 years, 234 persons aged 30-39 years, 1760 persons aged 40-49 years and 133 persons aged 50 and older. Hypertension over 18.7 / 12 kPa was observed in 83/2203 (3.77%) persons; cholesterol above 6.5 mmol / l in 135/2203 (6.13%) persons; triglycerides over 2.3 mmol / l in 142/2203 (6.45%) persons; morning glycaemia over 6.6 mmol / l in 74/2203 (3.36%), irregular physical activities in 178/2195 (8.11%) individuals, obesity over 30 kg/m² BMI in 166/2203 (7.54%) and intensive mental stress in 224/2178 (10.28%) persons. The highest incidence of risk factors was recorded in the oldest age group, 50 years and older.

Conclusion. The most common cardiometabolic risk factors in a military population are the intense psychological stress, poor participation in physical activity and obesity. These factors are most common in the oldest age group of respondents. Therefore it is necessary to begin a program of promoting a healthy lifestyle in the military population.

Key words: cardiometabolic risk factors, military

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